

**CROSSKEY**

**SINGLE FINGER PRINT SYSTEM**





Class HV6074

Book .C7

Copyright N<sup>o</sup> \_\_\_\_\_

**COPYRIGHT DEPOSIT**











# THE SINGLE FINGER PRINT IDENTIFICATION SYSTEM

BY WALTER C. S. CROSSKEY

*A PRACTICAL WORK UPON THE  
SCIENCE OF FINGER PRINTING*



A  
1  
3  
5  
7  
9  
11  
13  
15  
17  
19  
21  
23  
25  
27  
29  
31  
33  
35  
37  
39  
41  
43  
45  
47  
49  
51  
53  
55  
57  
59  
61  
63  
65  
67  
69  
71  
73  
75  
77  
79  
81  
83  
85  
87  
89  
91  
93  
95  
97  
99

PRICE \$5.50

PUBLISHED BY  
CROSSKEY SINGLE FINGER  
PRINT SYSTEM

SAN FRANCISCO, CALIFORNIA  
U. S. A.



HV6074  
.C7

Copyright 1923, by Walter C. S. Crosskey

All rights reserved

Including that of translation into  
foreign languages, including the  
Scandinavian.



GENERAL EFFICIENCY COMPANY

Printers

136 McALLISTER STREET

SAN FRANCISCO

CALIFORNIA

FEB 21 1923. A.

©C1A696449

no 1

Patents have been applied for covering our new method of finger print classification and our improved filing system in the United States of America, England, Canada, Australia, and all foreign countries throughout the world, and all persons are warned against attempting to use the same without proper license.

TO  
MY SILENT PARTNER  
THIS VOLUME IS  
DEDICATED.





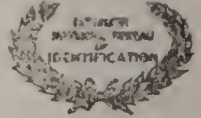
*Walter C. S. Crosskey.*

PHOTO BY TOM GREEN

## SINGLE FINGER PRINT SYSTEM



Police Department, City of Oakland, Calif.  
Bureau of Identification



October 2nd, 1922.

Mr. W. C. S. Crosskey,  
Crosskey Single Finger Print System,  
Suite 112, 164 Geary Street,  
San Francisco, Calif.

My dear Mr. Crosskey:

I take this opportunity of expressing to you my regard for your system, known as the "Crosskey Single Finger Print System".

I have examined very thoroughly the system, and have made numerous tests in searching for single finger prints, and on, to the full set of finger prints in the regular files, from the key, and have been very successful in each instance. The time consumed in the search depended entirely on the portion of the print available to work from.

I have been engaged in the identification profession in charge of the Bureau of Identification, in the Oakland, California Police Department, for fifteen years, and have made considerable study of the problem of single finger print work, and I find your system the best I have had an opportunity of examining or testing in that time.

Wishing you the success that you deserve in the sale of your system, as well as wishing you well in every other way, I am,

Sincerely yours,

*Harry V. Caldwell*

Inspector in charge Bureau of Identification,  
Police Dept., Oakland, Cal.

For six years President International Ass'n  
for Identification.



Some of the pieces of finger prints that were submitted by experts to the author and were successfully identified out of a file containing over 400,000 finger print records. The illustrations show the full finger impressions and the pieces that supplied the key by which the identifications were made.



“ Finger Prints are the signatures  
of nature on her handiwork, man ”.

John Burroughs.

Name Richard Doe

No. 28830

Class. 27 I O O 17+

Aliases.

Ref. 12 I I I 16

	W <sub>12</sub> I	"	W <sub>12</sub> O	9	W <sub>12</sub> O	16	R <sub>12</sub> SCR 17+
R <sub>1</sub>							
12							

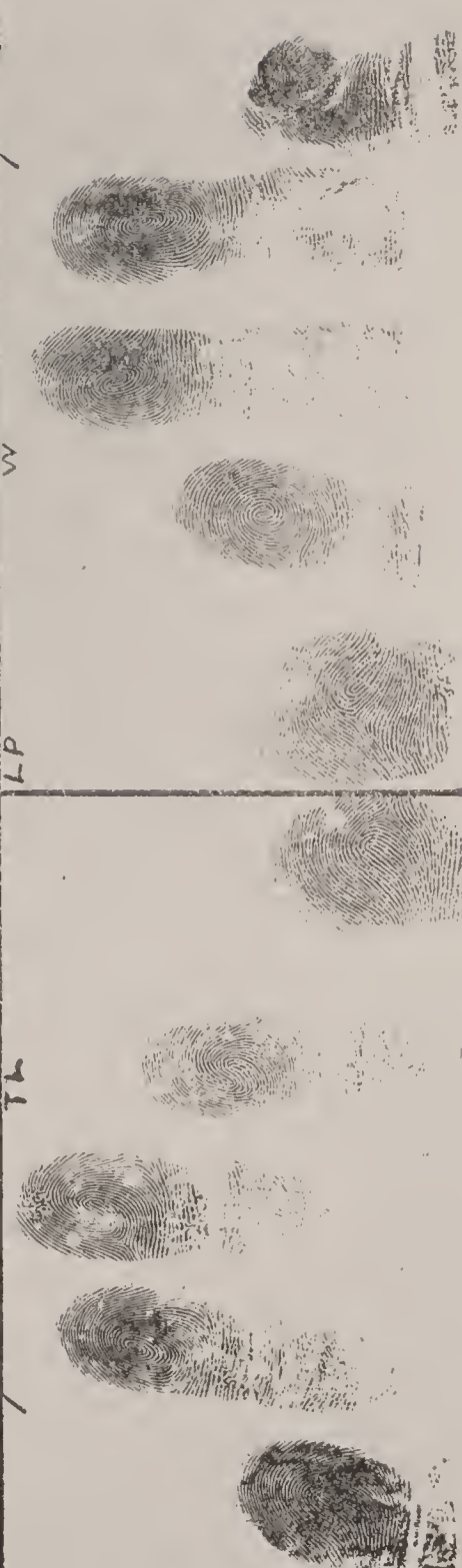


Plate 1.







## THE SINGLE FINGER PRINT IDENTIFICATION SYSTEM

### INTRODUCTION

There is no more striking testimony to the usefulness of finger prints as a means of positive identification than the many convictions that have been secured in the Courts.

The acceptance of finger prints as a reliable scientific witness that cannot be swayed by any human emotion, throws an added responsibility upon the finger print expert as a protector of society against the depredations of its subnormal members. The Single Finger Print Identification System has been devised to enable the finger print expert to fulfill this responsibility to its greatest extent.

Guessing and hoping to be right no longer have a place in the problem of Identity, or in the conduct of an Identification Bureau. The Finger Print Expert of the present time must not only know where to place a finger print, but must be able to predict with a moderate degree of precision where it belongs—who is its owner. The use of charts is a sure and speedy way to substitute fact for surmise.

This system provides for the quick finding and recognition of any set of finger prints that may be in the file from a duplicate of any one of the ten digits obtained from another source. It supplies a scientific, consistent and practical system that will expedite long, wearisome search, and place the operator in touch with the print wanted in a few moments.

The finger print expert must be efficient if the expected results are to be gained. Real efficiency is the science of discovering how to do things more easily, and more accurately. Practical efficiency in an identification bureau means the securing of accurate records that will eliminate any degree of guess work, by giving a premise of fact that allows scientific authentication. The Single Finger Print Identification System is built on a firm foundation of scientific principles that provide the progressive operator with the assistance that is so desirable.

The utility of this system will be appreciated more especially by those who are engaged in the arduous process of searching the files to complete identifications. Every workman in the exercise of his art should be provided with proper implements, and this system provides the quickest means for making a scientific identification than may be employed in any bureau.

As the present system of classification and filing of finger prints is well founded and thoroughly rooted in universal application, there is no need to disturb its foundations. So this system commences its operations where the 'Henry System' concludes its classification, and so acts as a real auxiliary to the present files no matter what size, for this system is devised to allow for any expansion that may be needed.

In constructing the Single Finger Print Identification System, the inventor's chief aim has been to obtain the greatest amount of practical utility. Such principles of arrangement as appeared to him to be the simplest, and most natural, and which would not require either for their comprehension, or application, any disciplined acumen or depth of knowledge, have accordingly been adopted. By taking as a guide, the more obvious characters of the patterns and arranging them under such classes and categories as reflection and experience have taught him would conduct the enquirer most readily to the object of his search, has enabled the subtle parts of the patterns to be disregarded.

The adaptation of the single finger print by Commerce and Industry necessitates a reliable system that will quickly expose any attempt of forgery, or impersonation. The Single Finger Print Identification System will be found an effective preventive of deception and fraud by Banks, Insurance, Surety, Express Companies, Bond Houses, Corporations and Large Employers of labor; also by individuals to guard their own signatures. So, fundamental instruction of the finger patterns are included in this work for the convenience of anyone desirous of installing a finger print system, also suggestions that will help adapt this system to commercial and industrial purposes.

The reader may, with little study, at once put in to practice an easy, scientific, and therefore infallible system for obtaining the following results.

**First**      A scientific identification can be made by one finger without having to use another print for comparison.

**Second**      Any set of finger prints that are in the file may be located with only one rolled impression to work from.

**Third**      Any set of finger prints that are in the file can be found with only a single impression to work from.

**Fourth**      Any set of finger prints that are in the file may be found with only one latent acting as a guide--even when no deltas have been obtained.

**Fifth**      A classification of any finger can be sent out, or placed on the wire, and so establish a scientific identity at any distance any time it is wanted.

**Sixth**      The correctness of an amputated print may be immediately ascertained. It will eliminate the possibility of altering a classification by amputation.

**Seventh**      This system allows the greatest possible scope to gather scientific data from a file in the shortest period. This alone will commend this system to many earnest members of the finger print profession.



These results, however surprising they may appear to you, are facts, that may be easily ascertained. The inventor is convinced that anyone who will examine this system with a little care and patience, and with an open mind, will very quickly satisfy themselves that this is the long sought auxiliary the profession has been seeking through the years that finger printing has been establishing its right to the title of "The only sure method of human identification." Any finger print expert who will install this system as an adjunct to his file, can be assured that he is going to meet with a rich reward in results, and be in a position to render the best scientific services that can be accomplished to-day.

On Page 144, is a photographic reproduction that all readers of finger print literature are familiar with. To demonstrate the efficiency of the Crosskey Identification Charts, the process of finding these prints from their plain impressions is outlined, so that it may serve as a guide to find similar prints in the files. These well known prints are used so that the profession may see how practical and easy it is to chart and use this system. It will also set aside any doubts that may arise that special care has been taken to illustrate the efficiency of these charts with specially selected prints. The use of these prints show how this system acts as an auxiliary to the file, and how it is possible to expedite the search for any print, and how the 'hit and miss' method of working back, with its long task of scrutinizing innumerable prints for the purpose of finding a set from which a scientific comparison can be made, is eliminated.

Old things fade away. In the march of progress we demand new and more certain methods. The

Bertillon system, with its array of expensive instruments and time consuming filing, has been abandoned by progressive identification bureaus -- and more are following this lead every month - in favor of the simple method of finger printing; which gives a greater accuracy along with a confident scientific result in a small fraction of the time consumed by the anthropometric system. In the perspectives of time and achievement, the activity of this system will become colossal.

Included in this work are thirty original patterns that have been submitted by Mr. C. S. Morrill, Superintendent of the California State Bureau of Identification, Sacramento, Calif., to Sir E. R. Henry, Commissioner of Police, London, England; for definition. The photographic reproductions are accompanied by Sir Henry's explanation with drawings.

The author wishes to give recognition and credit to the people whose sincere co-operation has made possible the completion of this work, by taking this opportunity to publicly thank them for the valuable assistance and support given during the course of this task.

To Mr C. S. Morrill, Superintendent of the California State Bureau of Identification and Investigation, for allowing the hitherto unpublished prints and definitions from Sir E. R. Henry; also for the many splendid suggestions which have improved the system, and the duplicate cards that made early experiments possible. I am sincerely grateful and hope this work will prove as useful to him as his help has been to me during its construction.



To Mr. H. H. Caldwell, Inspector in charge of the Identification Bureau, Police Department, Oakland, California, also past President of the International Association for Identification. For bringing this system to the notice of the Identification Officers at Washington, D. C., during the Annual Convention of the I. A. I., September 1921. Mr. Caldwell spent less than one hour learning this system, then went to Washington and the system was sent by express several days later.

The regulation 8 x 8 cards with the ten rolled and eight plain impressions on each card were used. When Mr. Caldwell offered to identify any single finger print out of the thousands offered to pick from, he caused quite a little sensation. And when he successfully demonstrated that it could be done by doing the same, not once, but as many times as called upon. Every one was satisfied that the long sought auxiliary for the regular file was found.

To Warden James A. Johnston, and Captain S. L. Randolph for allowing the use of the file at San Quentin Prison, which was a heavy contributing factor in producing this system, and my thanks are herewith acknowledged. Not only was this help a personal aid, but it was a service rendered to society that has helped to materially advance the science of finger printing as a means of identification.

The latents shown herein were sent by Chief of Police August Vollmer, Berkeley, California, who is also Chairman of the Board of Managers of the California State Bureau for Criminal Identification, and by Inspector Frederick Kutz, Superintendent of the Iden-

tification Bureau, Police Department, Long Beach, California. Nor must mention be forgotten of Chief Vollmer's sincere magnanimity in offering the result of his many years work upon a single finger print system.

In the hope and trust that this work will be found full, accurate and reliable; and that it will awaken the minds of its readers to the value of the single digit identification, this work is submitted to the judgment of a thoughtful profession.

Walter C. S. Crosskey.

# NATIONAL BANK OF NEW YORK

Key No. ....

Ledger Vol. ....

Page .....

Authorized Signature .....

Address .....

P. P. C. ....

Left Index .....

Business .....

Remarks .....



## COMMERCIAL

### UTILITY OF FINGER PRINTS

An impression of the inner surface of the first joint of the fingers, is called a finger print; because the finger leaves its mark, the formation of the ridges, upon the subject touched. It is not necessary to ink the finger in order to produce an impression. Healthy persons naturally excrete an oily substance that keep the ridges of the skin moist and pliable. So when any ridge formation of the fingers comes in contact with any object, a mark, which is not always discernable to the naked eye, remains upon the spot that was touched.

The formation of the ridges upon the fingers is regular in its multiformity. So much so, that the similarity of the symmetry produce definite patterns, whereby scientific identification can be made. The knowledge and use of these patterns, extends over a period of more than sixty years.

Finger prints have earned the title of **“The only true medium of Identification”**. \* They are the one thing that are not liable to misinterpretation. Identification is not merely a business need, it is a social necessity that will eventually be recognized by everyone being finger printed, so that their identity can be established whenever they want it.

\* Wilder & Wentworth, “Personal Identification”. pp 340.



As business is usually in the lead in such movements, it will not be long before commerce and industry will be demanding its presence upon documents that lend themselves to fraud and deception. As this is being written a newspaper clipping in today's mail states "That at the American Bankers Association 47th Annual Convention, held in Los Angeles, October 1921, a report had been adopted recommending that finger prints be utilized to a larger extent in their banks".

There is a theory advanced that a duplication of a finger print can be made by mechanical means. For the benefit of those who have not sufficient time to make a thorough study of the science of finger printing, they are now informed, that this claim is a statement from persons who do not know, or understand the principles involved in this science. For any expert, with but little examination, can very easily detect the difference between an imitation and a genuine finger print. The texture of the skin does not readily lend itself to fraudulent imitation.

Fingers have always been useful, but are more than ever essential now, which is due to modern science of identification from finger prints because of their accuracy. Banks, Insurance and Express Companies, Bonding Houses, Mutual Benefit and Secret Societies may take the impression of one digit and so protect themselves against fraud. A finger print placed upon checks, notes, or other negotiable paper is far more positive and absolute proof against forgery than a signature, and will prove a good insurance for the prevention of fraud.

When travelers checks are issued, a single finger

print, or the drawee's finger classification upon the checks, would provide a ready means of identification, no matter where it was presented.

When individual checks are made out, a registered finger print under the signature insures against forgery. A finger print placed upon notes, deeds, wills, mortgages, transfers, contracts, etc. will speedily eliminate fraudulent possibilities.

By taking the impression of one finger and attaching it to a policy, an insurance company can protect itself against the substitution of another body. It would be easy to take an impression after death. With the original classification in the file at the companies office, it would take but a few minutes to certify the correctness of any claim

It is a well known fact that the fire insurance companies have records of unscrupulous persons who go about from city to city, insuring places of business in each city by using different names, destroying them by fire and then collecting from the insurance company for the loss. If a single finger print was placed upon record, and with the classification on the file at the sub-offices, these people would be quickly eliminated from insurance circles.

With a finger print on file, the fraudulent insurance of automobiles would quickly be stopped. Upon each policy being issued the classification could be sent to the branch offices, and by arranging for the inter-change of classifications between the different companies, these unscrupulous persons could be prevented from perpetuating this class of crime.



The Civil Service Commissioners will soon be identifying applications by a finger print upon the examination papers, thereby preventing substitution of applicants for Civil Service positions. The Foreign office will be placing a finger print upon passports as it is a more conclusive identification than a photograph. Election officials will be taking a finger print at the polling booth. By its use at time of voting the most dependable trick of crooked politicians will be circumvented. In course of time finger prints will be utilized by the office of the County Clerk as a check to aid in the prevention of bigamy.

Fraternal and Mutual Benefit Societies could issue a card bearing a single finger print of a member taken before authorized officers. With the classification filed on an identification chart, the members movements could always be verified by telegraph and his identity established quickly at any distance.

Occasionally an employee defaults. As it is a general rule to bond trusted men, there is a little diffidence in requesting these employees for their finger prints, because of the notoriety attached as a means of criminal identification. But to ask for a finger impression is another matter, and one that can meet with no serious objections from anyone with sincere intentions.

A law is operative in Wichita, Kansas, which necessitates that finger prints be taken of all persons when pawning, or selling any article at pawn, or second hand shops. The pawnbrokers refused to follow it at first, and appealed to the Courts on the grounds

of unconstitutionality. The Supreme Court of the State of Kansas has rendered a decision that the "pawnshop ordinance is constitutional". Similiar laws are being prepared in New York, Chicago, San Francisco and other large cities.

No business concern would like to ask its customers to allow the ten digits to be printed with ink, for it is a messy, dirty job requiring too long a period to complete. But to request that the left index finger be printed as a precaution against error or fraud, is not at all unreasonable; for it serves as a protection to both parties of the transaction. A handy gasoline rag will remove all traces of the ink in a few seconds. It is not always necessary to use ink for taking impressions. If a little oil is placed upon a blotter, and the finger rolled on the blotter first, and then rolled on the place for the finger print, the ridges will leave a mark which can be made plain to the eye by dusting with graphite, or some black powder having a foundation of prepared chalk. Some sensitized papers are on the market that do away with the use of ink. But for a lasting permanent record ink is recommended.

One complete set of the Crosskey Identification Charts will provide for the registration of more than 5,352 000 different finger prints. This you will agree allows for a large volume of business, especially as each one of these fingers will have a separate and distinct classification of its own; for this system is based upon a numerical progression that is easily learned, and applied, once the patterns are familiar to the operator.

As a practical, inexpensive means of positive iden-

tification with a minimum of labor, this system is adaptable to any business that wishes to be confident of a scientific identification. The compactness of the filing case, combined with the ease and quickness with which the charts will complete an identification, makes this system a valuable aid in the transaction of any business. The filing case occupies less than one square yard of floor space.

The only instruments required to take finger impressions are, a small roller, printers ink, a piece of glass to roll the ink upon, and white paper or lightweight Bristol Board. The card in general use in an identification bureau are of uniform size 8" x 8". For commercial purposes where one digit suffices, a 3" x 5" key card will hold all the data that is required See Plate No. 2.

By looking at Figure No. 3, which is enlarged to plainly show the many ridge characteristics, the reader may readily see the improbability of a duplication of this impression by another person--for any one with a little study may quickly become proficient in distinguishing the marked difference in the formation of the ridges even when the patterns look alike to the untrained observer.

The Single Finger Print Identification System will give the same results with one finger as may be obtained from a ten fingered print. It takes less time and less work. Nor does it necessitate a large equipment or expensive outfit to install a practical and consistent system. The simplicity in which it is operated combined with its scientific accuracy, places a utility for the prevention of fraud within easy reach. If the nine patterns and their 36 segregat-



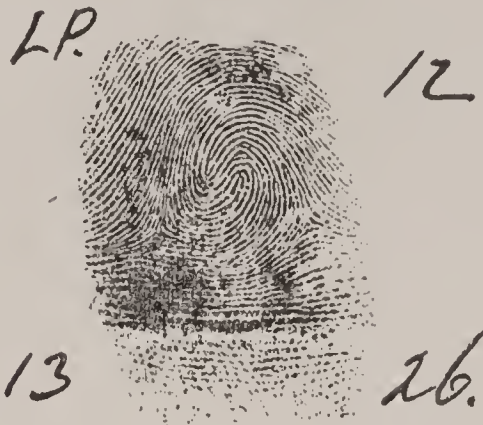
ions are learned the charting and filing can be attended to by any filing clerk.

In order to secure a consistent system, it is necessary that the same finger be printed of all persons. As the left index finger contains the largest variety of patterns, it is recommended that this be the finger used. In case where the left index finger has been amputated, the right index can be substituted. By placing a small letter "r" in front of the symbol letter of the pattern, it will be plain that it is the classification of the right index; viz. rU. rR. rW. rCP. rLP. rTL. rA. rT.

The adaptation of the single finger print is a social necessity to knit the nation into a more complete whole, for there will then be no more unknown persons. Society at heart is fundamentally sound. As a righteous and moral person has nothing to fear from an established identification, the deprecation that is heaped upon the advocates of finger printing by people who do not stop to think how useful to Society universal finger printing can be, makes one believe that these persons must have axes of their own to grind in attempting to condemn Finger Print utilization.

In the year 1920-1921 there were over 70,000 missing persons in the United States. Had a finger print been on file, a majority of these people would not have joined the "Flotsam and Jetsam" of the underworld. Finger prints would curb and cure this social waste. Take the many cases of Aphasia that occur each year, with but one finger print of a victim on file, an identification could be made, and the sufferer restored to a sorrowing family, to be given the personal

attention that these cases need. And so we could continue and find where finger prints are a distinct social asset, that is not utilized with the good that may be accomplished in mind..







## **SINGLE FINGER PRINT**

### **IDENTIFICATION**

It has been estimated that 60 % of all finger impressions are loop patterns. As there is no provision made for the identification of these loops as a unit, it is plain that the finger print expert's task grows just 60 % larger each day, and his efficiency will be impaired to the extent of the number of finger impressions that are in the file which cannot be identified.

When a crime has been committed, science lends us an efficient aid by supplying means whereby any finger print may be looked for and found. As it is very rare that a full set of finger prints may be located at such times, the operator has a tremendous task to make an identification from a single finger print. Very often it is only after weeks of hard work in searching the files that an identification can be made. Then it is too late to be of use. Time has erased many things that could have been gathered as evidence. Whereas, if the identification could have been quickly made, strong support would have been secured, and legal evidence gathered that would have aided justice in its course.

As the Ulnar and Radial Loops predominate in the file, they form the weakest link in the chain of identification, because of the difficulty in locating any certain finger print of that type. But with The Single Finger Print Identification System installed as an auxiliary to the file, any single finger print can be located in a few minutes. Thus, the efficiency of the operator is placed at the highest peak of usefulness.

As an example, let us suppose we are working with a file containing 50,000 finger print cards. Using round figures for brevity. On a 60% ratio, the file will contain approximately, 32,500 Ulnar and Radial Loops.

If the identification of a single finger print of these loops is needed, the chances of finding that particular finger print can be estimated as being about 32,500 to 1 (one).

By using this system, this 32,500 chance is narrowed down to a certainty; if ordinary care is used in classifying and working the system herein set forth.

As an illustration of the service this system will perform for an identification bureau, we will analyze how this 32,500 to 1 (one) chance can be narrowed down to a certainty.

In the first place, the Ulnar and Radial Loops are divided by classification into two (2) major groups of right and left slope loops. This segregation makes almost an even division of the loop pattern. In

testing this division of the loops with 10,000 finger print cards, exactly four more Radial loops were found over the number of Ulnar loops.

The second step is the division of the two major groups into seven (7) minor groups, by observing the individual characteristics developed by each pattern. A larger subdivision could be made in this manner, but it was not found necessary.

The actual figures of the chance of finding any particular loop in the 50,000 finger print cards was

32,500 to 1.

The major division reduced the chance to half of that number:

16,250 to 1.

The seven subdivisions further reduce the 16,250 to 1 chance to

2,321½ to 1

Then by using the Crosskey Identification Charts, which give 900 separate and distinct zones in which to place each finger print, the 2,321½ to 1, chance is further reduced to

2.58 to 1.

Less than three to one. Considering the chances that were against finding that one finger print and the manner in which the pattern has been narrowed

down so as to make identity easier; the three to one chance is a certainty, if that print was in the file under search. For upon taking out the correct chart and locking in the proper vertical column, the key will be found that will give the classification of the right set of prints to take out of the file, so that the necessary comparison could be made and the identification completed.

As all sets of finger prints are classified so as to obtain a working hypothesis, it has been found expedient to commence the single finger print identification system where the operator finishes the regular classification. So useless repetition of the well covered field of instruction in the patterns will not occupy our attention here,—for the benefit of those who do not know the patterns, they are included in another part of this work — we will make our start from that point in this chapter.

This system is not so complex or intricate that it will take a long tedious study to apply. On the contrary anyone well versed in reading the patterns can become proficient in operating and using this system after a few hours practice with a few prints. Any expert classifier who will follow these instructions, will be able to operate the Crosskey Identification Charts quickly, and with accuracy, with but little practice upon the extra work, which only requires a few more minutes to be spent upon any set of finger prints. After a short practice the author found that the time taken for this extra work averaged less than five minutes for a set of finger prints.

For the purpose of simplicity, and also to provide



for the quickest method of identification of the loop patterns, all loops are divided into two types. The right slope loop and the left slope loop. Figure 2 and 3. The division of the loops into the regular four types, right hand Ulnar and Radial; and left hand Ulnar and Radial; so as to allow a full classification of the ten digits, is explained under the heading of "Regular Classification."



Figure No. 2.



Figure No. 3.

It does not matter upon which hand a loop is found, it will come under one of the two major groups of the loops, and be either a right slope loop or a left slope loop, just as found upon either hand for the charting purposes of this system.

When the charting classification is completed, the key number of the print is placed in the proper zone, or square, of the identification chart carrying the first and second part of the classification for its heading.

As the loops comprise the largest group of the patterns, it has been deemed advisable to make the



largest segregation among the loop patterns; and so allow the greatest possible expansion of this system which would make it adaptable to the large size files, and be a real working auxiliary for the finger print expert

It has been estimated that the percentage of the different types of patterns are: Loops 60 per cent; Whorls and Composites 35 per cent; Arches 5 per cent. Accidentals are not counted as they appear so rarely. Out of 50,000 fingers that were tabulated by Scotland Yard, only 61 were Accidentals.

So the Loops are segregated into seven sub-divisions. More can be made if wanted - it depends upon the size of the file. Each sub-division is based upon the individual characteristics that are found in the core of the patterns. Which usually show on an object that has been clasped, or upon anything that the fingers have rested upon in a natural manner. A large number of illustrations have been supplied of the different types so as to make them clear in the reader's mind.

These segregations do not in any way interfere with the regular classification of any print, as the inventor of this system has endeavored to keep as close to the "Henry System" as possible, for by making the two systems dovetail in the simplest manner, the efficiency of both would be enhanced to the identification profession.

Figure 4 is a right slope loop that has a single rod for its inner terminus. So the symbol R. 1 (one), is placed in the upper left hand corner of the print, for

the rod makes this type of loop fall into the second sub-division of the loops. It matters not where the rod starts as long as it does not touch the axis of the loop, it will come under the category of the second segregation. The capital letter is for the pattern, and the numeral, 1, showing there is a single rod within the core.



Figure No. 4.

This rod almost formed an island - had it done so, it would have made this loop fall into the R. i., division. As the top point of this rod is the inner terminus, the first count is commenced from that point. The outer terminus, at the delta, is a small dot very close to the outside ridge. Counting between these two points six ridges are found to intervene. This number is placed in the upper right hand corner of the print. Fig. 4.

The third part of the classification is had by tracing the delta line to a point vertically under the point of the rod that marks the inner terminus, then counting down to the flexure of the phalanx—omitting to count the delta line; but starting the count on the

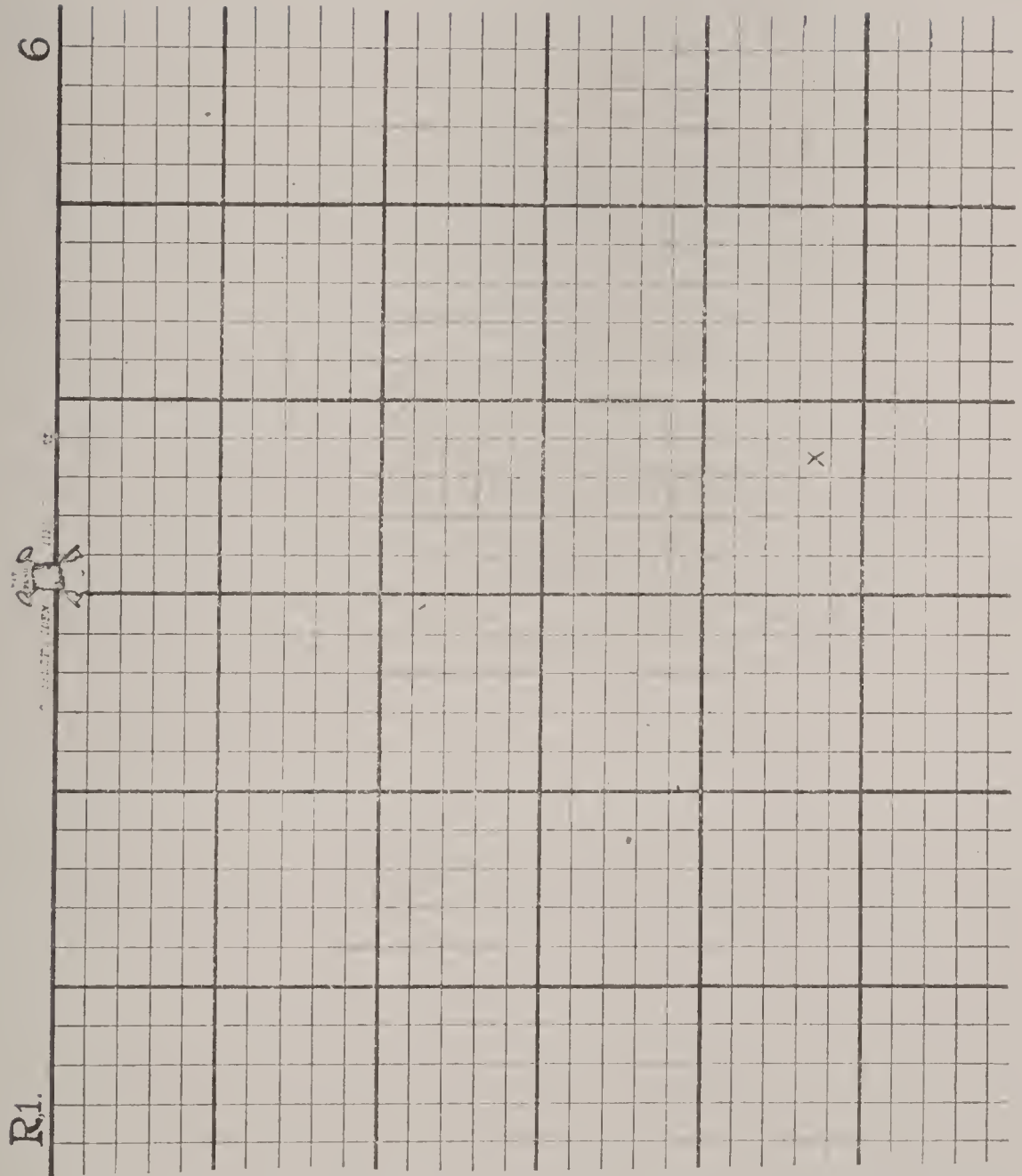


Plate 3.





Figure No. 5.



Figure No. 6.

line below the delta line. There are 19 ridges intervening between these two points, so the numeral 19 is placed in the lower left hand corner, Fig. 5.

Then commencing at the point of the rod that marks the inner terminus, a third count is made down to the flexure of the phalanx. It is 24. So the numerals 24 is placed in the lower right hand corner of the print, and the classification is completed. Fig. 6.

To write the classification so that it may be plainly understood, the symbols and figures should always be written in the same order as the operations are made to make the classification: R,1./6/19/24.

If the following order is adhered to when classifying, and also when a classification is written as a description, there will be no possibility of confusion when using this system:



### First operation.

The symbol of the pattern is written in the upper left corner.

### Second operation:

The first count is taken from the inner terminus to nearest delta, and the result is written in the upper right corner.

### Third operation:

The second count is made from the delta line to the flexure, and the result is written in the lower left hand corner.

### Fourth operation:

The third count is made from the inner terminus to the flexure, and the result is written in the lower right hand corner.

To file this classification so that it will be available when wanted, the identification chart marked R, 1., in the left corner, with the numeral 6 in the right corner; is taken from the file. By counting over to the 19th vertical column, and down to the 24th horizontal line, the right zone is found wherein the key number is placed. Plate. 3.

Every fifth line on the identification charts are heavy dark lines which makes it easy to locate any particular number of line wanted.

The three counts, and the description R, 1., give four separate and distinct starting points whereby any finger print can be identified. If one, or two, of these points are absent, or do not show clearly upon any latent, or plain impression; there is still one or more points that will constitute a starting place to work from to find the right set of prints to make a comparison with.

By keeping the last count on the horizontal line throughout the charts, it will be found possible to accelerate the search. If the delta is missing, it can be guessed at, and by looking on the charts around the number indicated, the same horizontal line receives attention all the way through the search - for, as a general rule, the third count will be made easier than the other two counts. The methods used are fully described in another part of this book.

The foregoing rules covering the three counts are applied to all loops. It was found that if the loops were charted as they look upon the paper, right or left slope loops, and to disregard the changing of names in the right hand loops; this method would equalize the loops in the files, and eliminate a large number of charts that would otherwise have to be handled in this system, if the right hand Ulnar and Radial, and left hand Ulnar and Radial Loops were retained. Also it does away with having to consult unnecessary charts that would take up time when making a search.

Care must be taken to avoid mistakes in charting the right hand loops. So it is recommended that the symbol be always placed in the upper left hand corner of the prints before making the three counts for charting.



Figure No. 7.

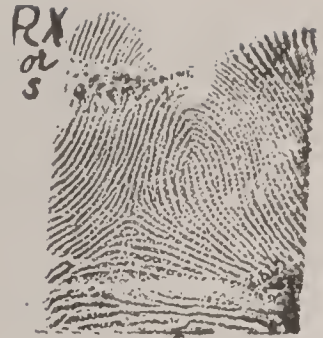


Figure No. 8.

## SINGLE FINGER

### CLASSIFICATION.

#### Segregating the Loops.

Every pattern is subject to differentiation. This difference in each pattern is readily perceived by the trained eye, and can be easily learned by anyone who will study the fundamentals of finger print classification, as laid down in the many instruction books that have helped make finger printing universal in its application, and a confident medium of scientific identification.

This system is not concerned as to which hand any loop pattern may be found upon, for it divides the loop into two types. The right slope loop, and the left slope loop. The first loop slopes to the right hand side, and the second loop slopes to the left hand side, as the impression appears upon the paper. The

symbols used are R and \ for the right slope, and U and / for the left slope.

For classifying purposes, it is thought best to retain the same letters to indicate the loops as used in "The Henry System" in obtaining the full reading of the ten digits. It will avoid confusion. One of the first things to memorize for using the Single Finger Print Identification System, is that the letter "R" or the symbol \ indicates a right slope loop; and the letter "U", or the symbol / indicates a left slope loop.

When classifying a full print for both systems, it will be found best to make up the regular reading first. The loop counts for inner and outer, and also the little finger counts, can be placed over on the right hand corner of the print, instead of the center as is customary. These counts will then be in the proper position, and available for the single finger classification.

In order that the readers may familiarize themselves with the various loop segregations, an assortment of loops is given with a sketchy analysis of a few, so that there is a guide to make the distinctions clear. These are not picked illustrations, but are taken just as they came before the author in the course of the day's work. Also the number of illustrations have not been limited to just the principal types, but a large variety have been diagramed so that the basic principles could be learned quickly.

As the inventor of this system, the author is trying to make as few rules as possible, believing that simplicity in operation is the best advocate to popularize any idea. So if the main points of these seven



types are depended upon when classifying, the system will soon prove its value to the operator.



Figure No. 9.



Figure No. 10.

Figure 9 at first glance appears to be two loops superimposed at the axis of the loop. It is the core on the second loop, which causes this peculiarity, being of an extra large size that almost amounts to an island. The inner terminus is the upper part of the short loop in the core of the pattern. The outer terminus is the line running into the first ridge, near the drawn counting line. This is a type of delta that can be controversial. So if this pattern was registered on the twentieth chart, no finger print expert would be satisfied with looking on the nineteenth chart alone in order to find it if wanted.

As the ridge that would be termed the delta line, is a short one, the counter drops off its end, on to the line below, and the second count is made with that line acting as the delta line. Four is the result. Then counting from the core to the flexure of the phalanx a third count of 19 is had. The classification, if written, would read: R/20/4/19.

Figure 10 has a core that almost forms an island. If the short upper ridge had joined its lower side, it would have placed this pattern into the "I" division. On the second ridge, above the inner terminus, there is an island. But it is so small that had the ink on the pad been heavier, it may have shown as a thickening of the ridge at that point. As it is doubtful that this characteristic will always show so clearly, the island is disregarded, and the impression is placed into the first division of R. The first count is 20, the second count

is 6 and the third count 20. Reading R/20/6/20.

When making the second and third counts a quick way was found by combining the two counts into one operation — if a standard glass with a wire or hair counting line is used. Place the glass with counting line in a vertical position with the inner terminus. With the counter, follow the delta line to the counting line of the glass, and make the second count; mentally fix its number in mind. Then place the point of the counter on the delta line, start the third count by including the delta line and up to the inner terminus.

Add the two totals, and the third count is had.

Looking at figure 6, which has a line in this position; and following the delta line to the vertical line and then counting down to the flexure, we find 19 ridges intervening, then placing the point of the counter on the delta line, which is counted as one (1), we find 5 ridges between that point and the inner terminus. Adding 5 and 19, the third count is 24. The second count is 19.

The first thing that attracts the eye on figure 11 is the scar at left of pattern. As it is not directly in the center of the pattern, it is best not to classify it

as a scarred type, for it may not show on a plain impression. So it is given the U classification, reading U/2/10/14.



Figure No. 11.



Figure No. 12.

Figure 12 is a plain loop of the left type, reading U/19/5/20.



Figure No. 13.



Figure No. 14.

Figure 13 is another pattern that could be placed in some other segregation. It has a scar that is plainly discernable on a rolled impression. But as there is a large doubt whether this scar would show on a plain impression, it is advisable to place it in the first division of the R. Making the count from the inner terminus to the dot on the delta, which represents the outer terminus, a count of 14 is found, a second



count of ten, and a third count of 20 makes a reading of R/14/10/20.



Figure No. 15.



Figure No. 16.

Figure 15 is an easy type to identify. For it has no less than four inclosures and 9 forks within the pattern proper. Notice how the line runs through one of the inclosures, adding one to the count of the ridges. These will be referred to later.

The small islands on the inner loop of figure 16 are not large enough to place reliance upon for a scientific identification, for with slightly heavier ink, they might form an enlarged ridge at these points. U/16/8/19.



Figure No. 17.



Figure No. 18.



Figure No. 19.



All counting, with the exception of the second count, is referred to as being from the inner terminus, or core. It is well to fix this point in mind as it comes very handy to the operator later on as an understanding of the system comes to anyone.

The second segregation is also a very easy one to define. Any loop that has one (1) rod within the core, divides the type into the U.1., or R.1., sub-division. See figure 5.



Figure No. 20.



Figure No. 21.



Figure No. 22.

Figure 20 has a rod that makes a distinct break before touching the upper side of the loop. Thus making it independent of the loop, and placing it automatically into the R. 1., segregation. The 5th and 7th ridges, counting from the inner terminus, bifurcate, making inclosures that are very prominent. If one of these inclosures were on the rod in center, it would place this pattern in the Island division. The line in this illustration is placed higher than it should be so that these characteristics could be plain. For they constitute an important point in making an identification, as will be shown later on in this work.

Figure 21 has a short rod for an inner terminus, and a dot at the delta for the outer terminus. The short rod at the core makes an abrupt break at each end. If it had run into the loop, which would have easily happened, had the ink been thick upon the pad, an enclosure would have been formed that would have placed the impression into the R. 1., division. There is also a noticable scar, but as it is doubtful that the scar would show on a plain impression, it is wisest to class it as a R. 1., type.



Figure No. 23.



Figure No. 24.



Figure No. 25.

A very plain type is figure 22. The outer terminus is the small ridge or delta. As this short line makes an abrupt ending before reaching the point vertically under the core, when making the count, the pointer drops off this abrupt end on to the ridge below, which is followed to its end, where the count is started to the flexure.

There is a faint scar showing on figure 23, but it is too thinly marked to cause this pattern to be placed in the scarred division. The delta is the short ridge that ends abruptly before the center of the pattern is reached. So the ridge is followed to the counting position, and a count of 9 is obtained.



Figure No. 26.



Figure No. 27.



Figure No. 28.

It is very important to make the third count vertically under the inner terminus. The third counts are all placed on one line of the charts, which is a large help in making searches. For having the one line established, there is no need to go up and down the chart, for if not on one chart, the same position is looked at on the next chart. When a delta count cannot be ascertained, and its number has to be guessed, by only having the one horizontal line to consider, a large amount of work is avoided. After making a few searches, the operator will find this rule a well established benefit that expedites the work.

If the counting line is shifted a little each side, a different count will be had each time. This is due to the ending or bifurcation of some of the ridges as they run out of the pattern.

An impression like figure 23 is easily located at any time. In lifting latents of this type, over 90% will show a complete pattern, which, if on record, will be identified in a few minutes.



Figure 28 has a complex appearance at the core, and requires a close scrutiny to determine which rod is the inner terminus. On the fourth ridge just above the tracing line, a small inclosure appears, which gives this pattern an easy, distinctive point for identification.



Figure No. 29.



Figure No. 30.



Figure No. 31.

The third segregation is made by placing all loops that have two rods, within the smallest loop, into the U. 2., or R. 2., sub-division. When making the counts on this type the inner terminus is the point of the rod farthest from the delta. Figure 32 has a short rod, bifurcating from the upper side of the loop. Had it continued and joined the loop again, it would have made an inclosure, and placed this pattern into the island class. On the lower side of the loop, are two islands, but they are too small to place reliance upon, as heavy ink would only show a thickened ridge. So the rods are observed as being the most distinctive points, and the pattern is put into the R. 2., division. Reading R. 2.,/20/9/24.

Figure 33 has a very short rod running from the central rod in the center of the loops. As it is so pronounced, and stops short of bifurcating the loop,





Figure No. 32.



Figure No. 33.



Figure No. 34.



Figure No. 35.

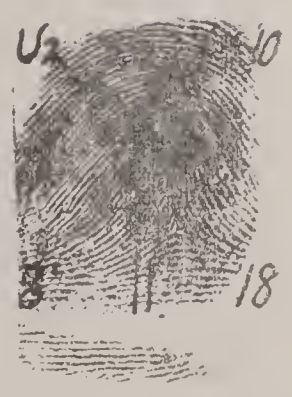


Figure No. 36.

as well as the long rod having a decided termination before reaching the axis of the loop, the tops of the two rods form the most noticable point; thus placing this pattern in the R. 2., division. Back of the delta is a small star-like scar. This could be used in making an identification by wire, as later explained.

Figure 38 has an island on the upper ridge, close to the axis of the loop, but it is too small for practical purposes. So the slightly curved ridges in the center of the core place this pattern in the R. 2., division. Reading, R. 2./5/8/13.



Figure No. 37.



Figure No. 38



Figure No. 39.



Figure No. 40.



Figure No. 41.

There is what looks like an attempt to make a rough cross on figure 40. This is caused by a shrinkage of the skin, that is known as a crease, for it leaves a furrow, or depression across the ridges. People who keep their hands in caustic waters for long periods, and mechanics using gasoline, are most frequently subject to these shrinkages. A scar of a cut will leave a somewhat similar mark, but the difference between a crease and a scar are easily detected. The ridges of a cut rarely heal straight, whereas a crease does not effect the contour of the ridges at all. On page No. 62 are examples of both scars and creases.



As a crease can be impressed by temporary causes, it is best to ignore them when classifying. So instead of placing figure 40 in the scarred sub-division, it is placed in the third class and reads U. 2./12/4/16.



Figure No. 42



Figure No. 43.



Figure No. 44.

The fourth segregation is made by placing all loops that have three or more rods inside the smallest loop, into U.x., or R.x., sub-division. As long as there are more than two rods, the pattern belongs to the x type. Sometimes the rods will run straight up into the axis of the loop, again, others will be found that have three or more rods independent of the loop. So long as three or more ridges appear within the smallest loop, the pattern is placed in the "x" class.

Figure 42 is a very distinctive loop. Clearly showing three rods in the center of the pattern. The numerous bifurcations, forks, islands and inclosures, give it a determined characterization — all of which assist in identification. The middle rod is the inner terminus, and the outer terminus is the small bifurcation at delta. Making the first count, eighteen ridges are found. On the fifth ridge is an inclosure. If the counting line is accurately placed, it will fall across the upper fork that causes the two ridges at this point, but the

fork does not count as two, as it only shows a thickened ridge at the point where the line crosses. Counting from delta line to the flexure, are four ridges, and the third count gives a total of 20. So the classification reads R.x./18/4/20.

On taking the third count, notice the twelfth and thirteenth ridges — counting from the inner terminus the vertical line touches a fork of each of these ridges that branches to the left of that position. It is the observation of such details that mark the difference between the mediocre operator and **the expert**. Only by training the eye to distinguish these little, visible characteristics, that are manifest upon all patterns, can anyone hope to become other than an amateur in the science of finger printing.

The most noticable feature, outside the core of figure 43, is the island on the fourth ridge over the inner terminus. The core possesses an idiosyncrasy that is distinctly individual, and rarely seen. It is not difficult to decide which is the inner terminus. There is a count of 20, a second count of 3, and a third count of 15. Making a classification that reads R.x./20/3/15. Although this pattern is distinctive in minutiae and readily found if wanted, it is a type that is extremely difficult to pick up in latent form, owing to the proximity of the ridges, which is a difficulty that is not observed with an inked impression of this type.

Figure 44 has no less than four rods, one of them bisecting the loop. Its most noticable feature is the tendency of the ridges to fork. There are nine separate and distinct forks in less than one square half inch.



U.x./5/9/14 show two rods bisecting figure 45, and figure 46 shows another pattern which is distinctive by the number of forks it contains. On the first rod from the inner terminus, is a well formed island, also the fifth ridge contributes two of the same details; thus making individual an otherwise plain pattern.

The fifth sub-division is made by segregating all the loops that have a large island, or inclosure, in the immediate vicinity of the core, into one class. Which for brevity, is termed, the island type, and indicated by U.i., or R.i.



Figure No. 45.



Figure No. 46.



Figure No. 47.



Figure No. 48.



Figure No. 49.



Figure No. 50.



Figure No. 51.

Care should be used so that the very small islands are not included in this sub-division, for, as stated, if the ink is placed heavily on the inking pad, a blurred impression will most probably be the result. This finer distinction of the islands, is one part of the classifier's work in which personal judgement has to be entirely relied upon.

Any dilettanti can dabble in a science. Nor does it require a great knowledge to find a one over one classification, when the patterns are all clear types. But the expert is the one, who, by close attention to detail, is able to immediately exercise his own judgment, and, in 99% of his cases, be authentic in his statements.



Figure No. 52.



Figure No. 53.

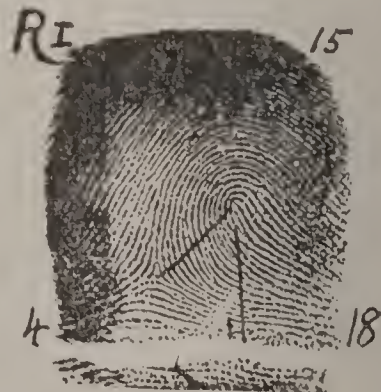


Figure No. 54.



Figure 52 is a pronounced island type, for it has two inclosures. One on each ridge of the innermost loop. There are also four more inclosures on this pattern but they are too remote to notice in defining its class. One is on the seventh ridge below the counting line, another is above the line on the same ridge. The inner terminus is on the lower side of the largest inclosure, making a count of 13. The second count is three, and a third count of 12 gives a classification of R.i./13/3/12.

The inclosure on figure 53 is very plain. Although the innermost loop breaks at the axis, no one would make the mistake of placing this pattern in any other than the 1 division. The inner terminus is the short end above the inclosure, and the dot at the delta is the outer terminus. The delta line is a short one, so recourse is had to the line below. The classification reads R. i./11/8/17.

The inner terminus on figure 54 is at the point where the center ridge bisects the loop, which gives a reading of R. i./15/4/18.



Figure No. 55.



Figure No. 56.



Figure No. 57.



Figure No. 58.



Figure No. 59.

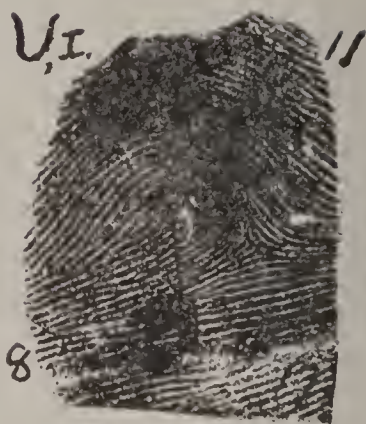


Figure No. 60.

It will be observed that the first counting line is drawn above the two smaller inclosures on figure 58. As the center inclosure is on a ridge that terminates its course before bisecting at the axis of the loop, the inner terminus is at the fork of the largest inclosure thus making a count of 14.

Figure 55 is an easy distinctive type. The forking of the second and third ridges enable it to be known in a quick glance. Above the axis of the core, heavy ink has obliterated the ridges. This is caused by not rolling the ink enough when it is placed upon the pad. The thinner, and smoother, the ink is rolled; the finer the film is made for the finger to be placed in for inking, the more satisfactory will be the impression that will be obtained.

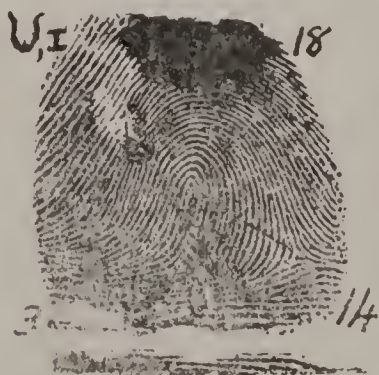


Figure No. 61.



Figure No. 62.



Figure 61 has a small scar that gives a good contrasting point in what is otherwise, a plain impression with very little individuality. The most distinctive detail being the short bifurcating ridge between the eight and ninth ridges.

The fifth division of the loops is made by placing all loops that are difficult to define as belonging to the other segregations, into a separate class. There are a large number of loops with ridges running criss, cross with each other, that present individual idiosyncrasies which make these patterns subject to controversy.

The International Association for Identification showed, by appointing a committee to decide upon patterns at the 1921 Convention, how desirable it is to avoid making distinctions in the patterns that are likely to cause a difference of opinion. For by so doing, a system that has taken years to build is retarded in its work. This committee's work is the most constructive step made by the Association in its history.

As stated on page 14, the present system, generally known as "The Henry System", is well founded and thoroughly rooted in practical use. It would be extremely inconsiderate of the splendid results that are daily produced by it, to make arbitrary rulings that would in any way effect the general principles upon which the system is built. To add to it, or by clarifying differences of opinion on debatable points, is to add constructive measures that will help everyone engaged in using the system. For this purpose, the

author has kept the segregations within limits, so the Single Finger Print Identification System can be a real auxiliary to any file.

This system provides a subdivision to care for the loops that have complex cores, which cannot be defined as belonging to any of the other six subdivisions. The illustrations presented to show this type are not, by any means, fixing the shape that a pattern has to assume before going into this class of segregation. It is established for any kind of a loop that does not belong in one of the other six divisions. U. z., and R. z. will indicate any of these complex types.

The individual characterizations in the formation that the ridges may assume, make this type of loop an easy subject for identification. As the reader, by attention to the partial analysis made of the preceding types, has now a good knowledge of finding the distinctive features of a pattern, there is no need to point out the peculiarities of the illustrations of the U,z., and the R,z., subdivisions.



Figure No. 63.



Figure No. 64.



Figure No. 65.



Figure No. 66.



Figure No. 67.

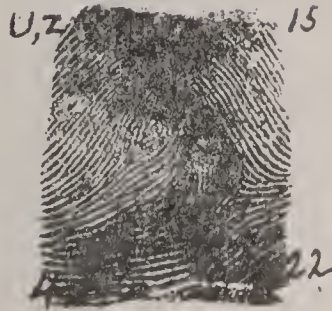


Figure No. 68.

The seventh and last segregation is made by placing all the scarred loops into a subdivision indicated by placing the small letter "s" after the capital letter: U,s., or R,s. If the scar upon a rolled impression looks as if it is doubtful that it will show on a plain impression, it should not be placed in this subdivision, but should be placed in the class indicated by the pattern at the core. The following illustrations of nine scarred patterns will present a guide for this subdivision.

The eight creased patterns are shown to familiarize the reader with the creased type of impression. But they should not be included in the scarred subdivision, as the creases may be of a temporary nature only.

It will be noticed that the termination of the ridges in a creased pattern are straight, and abrupt at the crease; whereas, the end of the ridges at a scar show a slight curvature, clearly making a distinction that is easily discerned.



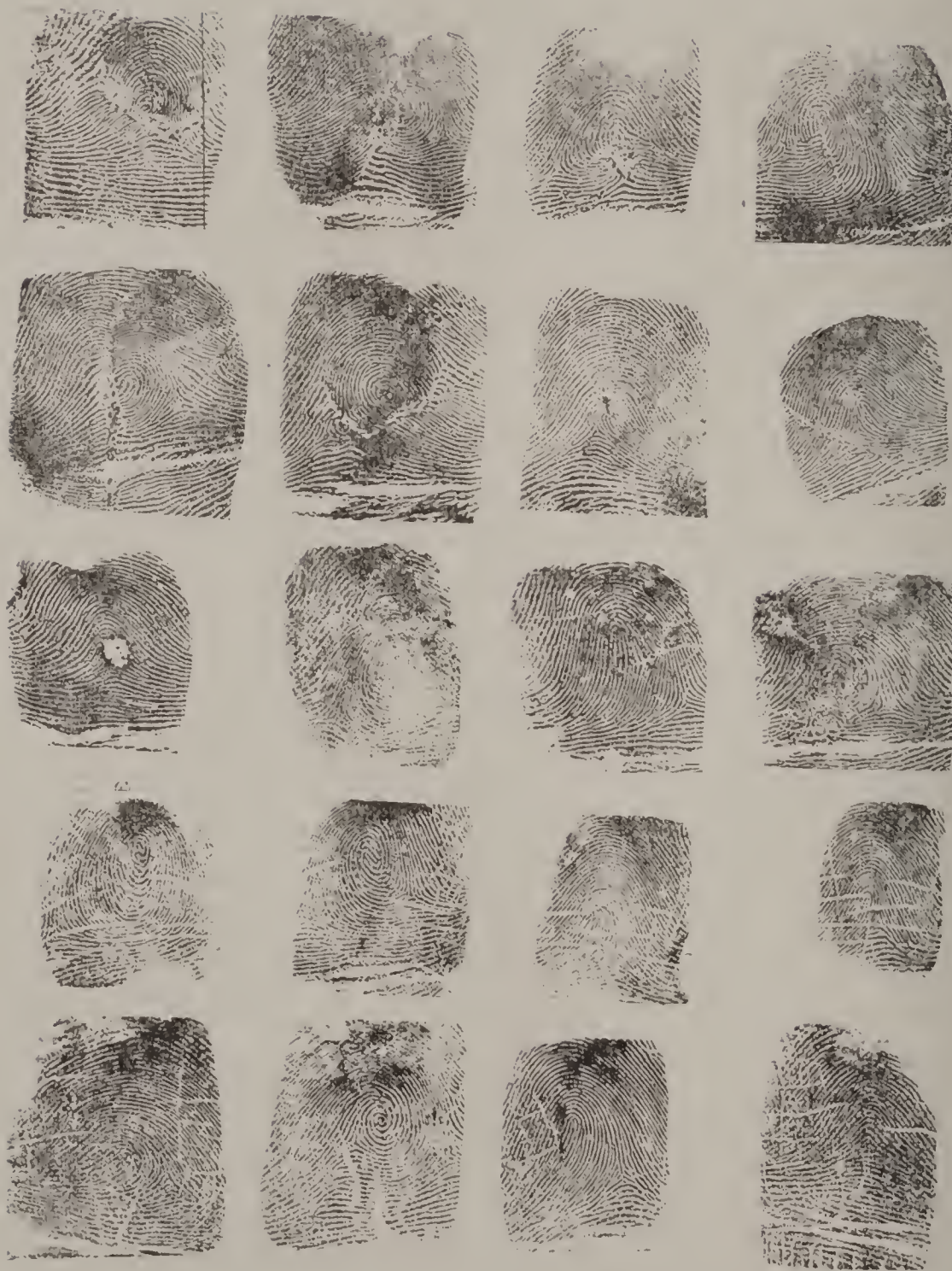


Plate 4.





## SINGLE FINGER CLASSIFICATION.

### Segregating the Whorls

Following the Loops, the largest number of patterns are known as Whorls. So named because the formation of the ridges circle around, and around, getting smaller as they reach the center, or core, of the pattern.

The difference between the Whorl, the Twinned Loop, or a Lateral Pocket Loop, is a large one that is easily discerned. As the Composites are given the same numerical value as the Whorls, when ascertaining the primary classification for a full print, it has become a common practice with some classifiers to place the "W" symbol under all the Composite patterns. This cannot be continued if this system is to be an efficient aid to an Identification Bureau.

The margin of difference between these patterns is a wide one, so there is no excuse for a continuation of the above practice, if this system is to be successfully utilized, so that results may be had—which is what all are looking for. The Whorls and Composites will have to be separated into different segregations and subdivisions so that the attention to detail is justified.

The distinctions that are made in separating the Whorls, are as simple as could be chosen, and require but little practice to enable anyone to place each type into its proper sub-division, 6 in number.

All the Whorls are indicated by the “W” symbol, which is followed by a small numeral or letter to define the proper subdivision—except the natural Whorl, which is always indicated by the “W” symbol alone. By placing the “W” first, the major group is shown, with the minor group, or sub-division, being indicated by the small numeral, or small letter. The six divisions are:

1st, the round Whorl, indicated by the symbol ‘W’.

2nd, the single spiral Whorl indicated by ‘W.1’.

3rd, the double spiral Whorl indicated by ‘W.2’.

4th, the elliptical Whorl indicated by ‘W.e’.

5th, the very large whorl indicated by W.L.

6th, the scarred Whorl indicated by ‘W.s’.

The most important feature of a Whorl in the “Henry System,” is the left delta. According to its posi-

tion on the index finger, the sub-classification is made. This rule is a binding one in making up a complete classification of the ten fingers.

But as the Single Finger Print Identification System tries to get as many points as possible to work from on a finger impression, and knowing the full value these working features can be, if they are all to be found upon a plain impression; the left delta is disregarded when classifying for this system. The nearest delta to the core, is the main, and fixed point in Whorls and Composites to be used in this system.

It matters not, what the position may be of the left delta, when classifying a Whorl to chart in this system. The nearest delta to the core, or inner terminus, of a Whorl, is the fixed point that commands the counting position.

So the reader is certain of this position, lines are drawn upon the illustrations to show where the three counts are taken. Also a somewhat sketchy analysis of the Whorls shown herein. The question may arise, why analyze at all? We know a loop is a loop and a Whorl is a Whorl. But if you are trying to identify a person who is thousands of miles away by one finger alone--you want to be sure that your identification is certain. To be certain it must be scientific. To be scientific is to give only facts.

This system is not giving you colors, features, age, height, weight, or lengths of certain parts of the body—that is a lot of useless clerical work. It is giving you a means to identify any person with the smallest known amount of work attached that has ever been



devised. For if you have one finger print of a person, and you know which finger that impression has been taken from, you can identify that person at the other side of the world by using the Single Finger Print Identification System, and be confident that you are right in your identification.

We do not have to make a complete analysis of all the illustrations, to learn the method whereby this is attained. Were a full description of each illustration attempted, this work would stretch into a tiresome volume. So the inventor has undertaken to condense the analysis of such illustrations as required, to give the reader a thorough understanding of the system, with an economy of words almost amounting to parsimony.

The reader will also find it advantageous to familiarize the eye with the details referred to, as they are gradually training the eye to observe the most important points that are used to complete identification. Which will be thoroughly understood when we reach the end of this subject.

In order to chart and properly index any finger print, it is necessary to make three counts. The attributes of the finger patterns are such that, on counting the ridges, a number is found which provides a geometrical progression that automatically places each finger pattern into a different zone of the Identification charts. Thus enabling any finger print to be picked out from among the large number that any file contains.



There are four operations used to classify any single digit. As an additional safeguard, to be used for identification by telegraph, or at such times that another print cannot be had for comparison. There is a fifth operation, which is dealt with at the conclusion of the single finger print identification.

The four operations are: Deciding what major group and which minor division the pattern belongs. Making the first count. Making the second count. And completing the classification by making a third count. Each and every one in its proper position, and order. The following order must be observed to give consistency to this system:

First. Decide what pattern, and which subdivision the print falls under. Then place the proper symbols in the upper left corner.

Second. Count the ridges from the inner terminus to the delta in the Loop. If a Whorl, or Composite, ascertain which is the **nearest** delta. Then count the ridges between the inner terminus and the **nearest** outer terminus. Place the number of ridges found in the upper right corner.

Third. Follow the delta line that is nearest to core, to a position vertically under the inner terminus, and count the number of ridges to flexure of the phalanx. Place the number found in the lower left hand corner. ,

Fourth. Count the ridges from the inner terminus to the flexure of the joint, making sure a vertical line is followed. Place the number of the ridges found in the lower right hand corner. The classification is then completed.

Observe the lines drawn upon the illustrations. The second counting line is placed as close to the third line as possible for the purpose of showing the position in actual practice, the second count will be taken from the bottom part of the vertical third counting line under the inner terminus.



Figure No. 69.



Figure No. 70.

Figure 69 is a Whorl formed by the ridges adopting a concentric formation. If a line was drawn horizontally across its center, the top part would look as if they were half circles, while the bottom half would possess an elongated appearance. As the impression has more of a circular appearance, it falls into the first subdivision of the Whorls. With many bifurcations causing the ridges to fork running into the lower part of the pattern, the elliptical appearance of the bottom half is accounted for, but as the general appearance is more circular than otherwise, a W is placed in the upper left hand corner.

The short rod that bifurcates from the left of the inner circle, is the inner terminus. The outer terminus is the bifurcation of the short ridge at the delta. Ridges 5 and 6 fork just above the line drawn for marking the first count. As also do 7 and 8, also 11 and 12, also 13 and 14, thus making the count four

more in number than it would have been. A very distinctive feature is the small enclosure on the 8th ridge, the forking of the next ridge above the enclosure tends to emphasize this detail as a ready point for identification. There are no less than 20 forks within the pattern proper. The classification reads W/15/3/18.



Figure No. 71.



Figure No. 72.

The ridges of figure 70 show an almost perfect circle formation, the symmetry being marred in the upper quarter by the abrupt endings, and the forking of some of the ridges. The most prominent characteristics of the patterns are the dots at core, and each delta, and the short ridge that forks from the third ridge. Between the sixth and seventh ridges is a very short ridge by itself. This is a detail that possesses a large value for comparison, for it is a peculiarity rarely met. The many abrupt endings, and forkings, of the ridges, make this pattern an easy one for identity.

A very small rod that bisects the first ridge is the inner terminus of figure 71. The dots at deltas' are outer terminus. If we had used the left delta for the counting process, the number would of been 19 instead of 15 as shown. Also, it is doubtful if the left delta



would show on a plain impression. The most noticable minutiae of this pattern is a small enclosure on the fifth and sixth ridges, and the abrupt endings of the four different ridges between the first counting points. The outer terminus is the dot at the right delta. As the delta line is short, the counter drops off that line in to the line below when tracing the delta line to the vertical point to commence the second count. The classification reads W/15/8/26.

Figure 72 is what may best be described as a circular Whorl. It will be observed in the four illustrations of the "W" type, that each is different from the other. The "W" sub-division is for Whorls that have concentric formation, irrespective of forks, or bifurcations, or abrupt endings. As long as the general curvature is circumflected on a point that acts as an inner terminus, it falls into the first sub-division of the Whorls and is indicated by the W symbol.

The line drawn between the two counting points runs through three noticable details. Ridges three and four is an enclosure, as also seven and eight; while nine and ten is a fork. There is an extra large space between the 20th and the 21st ridges of the third count. Sometimes the space like this takes the appearance of the flexure between the joints, so care must be used when this occurs, that the second and third counts are carried to the right of the impression. This space is sometimes caused by the cicatrix of a cut that was in the center between the two ridges.

The second sub-division for segregating the Whorls is made by placing the single spiral type into a class by itself. Then indicated by a small numeral one (1) being placed next to the capital letter W, -W,1.



Figure No. 73.



Figure No. 74.

It is a simple matter to notice the difference between the plain Whorl of the first sub-division, and the single spiral Whorl of the second sub-division. The latter has a single short rod in the center of the pattern which is a part of the first circle. A short rod in the W type will not be connected to the circle. Sometimes the single contour is broken by returning to the same ridge, but if so, usually, the spiral contour again starts from the following ridges. If a general outline of a pattern is spiral, with a single rod for the inner terminus, it will be classed as W,1.

Figure 73 spirals for three complete turns, ending just above the drawn line between the first counting points. The fourth ridge is a complete circle and the spiral starts again on the fifth ridge. The line is a little overdrawn. The numerous short ridges, just dots some of them, and the fork with the broken ends, render this pattern an easy one for comparison. The written classification is W,1/10/9/21.

Taking a transient glance at figure 74 it could be mistaken for a Central Pocket Loop. But by tracing two or three ridges, the Whorl formation is

quickly ascertained. In the last illustration the right delta controlled the counting positions, on figure 74 the left delta guides the counts, because it is the nearest delta. Aside from the contour of the core, the most individual characteristics on this impression are the enclosures which makes the third and fourth counts. There is also an islet on the fifth ridge, while six and seven is another enclosure. The ink being rather heavy when this impression was taken, its thickness has almost obliterated the enclosures, for, to the naked eye, they look like thickened ridges.



Figure No. 75.



Figure No. 76 a.

The film of ink in which figure 75 was rolled, was just the right consistency. It is not the blackness of an imprint that is important. But to obtain all the ridge details which are upon a finger, so that every little line, dot, islet, etc, can be plainly seen under a glass, is the important technic when taking finger prints. Only by carefully watching the quantity of ink placed upon the pad, and rolling, and rolling it, can a satisfactory print be had. The notable features on figure 75 are forks and islets. Ridges four and five having one apiece, and six has two close together.





Figure No. 76.

Just inside the left delta of figure 76 is a small cicatrix caused by a little cut. As it is too small to place the pattern into the scarred division, no notice is taken of it. For, if picked up as a latent, it is doubtful if this mark would be considered a scar. The ridges, while firmly well balanced, show strong personal traits. The fourth ridge has an enclosure, which, combined with the many forks and short ridges forming the lower side of the deltas, mark this impression as a simple one for comparison.

The third sub-division of Whorls is made by segregating the double spiral Whorls into a sub-division that is indicated by a small numeral "2" placed next to the W, thus: W,2.

Figures 77 and 81 show several types of the double spiral Whorl. It will be observed that one side of figure 77 is flattened. Had the opposite side been similar this pattern would naturally fall into the fourth segregation of the Whorls. From the appearance of the core, it started to be a triple spiral Whorl, but bifurcated into the second spiral. Ridges two and three, five and six, seven and eight form an enclosure that cause one ridge to count

as two. Ridges four, five and six, have also an islet, all so close together that it would be an impossibility to mistake this impression for another if identification was being made. To the right of the pattern is a fine cicatrix, and on the left side are a number of creases. Reading W,2/18/8/22.



Figure No. 77.

Figure No. 78.

Figure No. 79.

Besides the core, figure 78 possesses three very plain features. The eleventh and twelfth ridge is an islet. On its left side is a prominent enclosure, with another islet on the next ridge.

Figure 79 is hardly elliptical enough to be placed into the fourth sub-division of the Whorls--although, if being searched for, and the W,2., division did not produce results, a look into the elliptical class might be profitable, as an impression like this may possibly be placed into the "e" class by an inexperienced operator.

Figure 80 shows a peculiarity in the number of forks it possesses close to the core. Ridges two--three--four--five bifurcate from one to the other. Forks are also at eight and nine, twelve and thirteen. The

inner terminus is the end of the rod pointing to the delta. The numerous abrupt endings give figure 81 distinction which it would not otherwise possess. Its reading is W.2/15/9/22.



Figure No. 80.



Figure No. 81.

The fourth segregation of the Whorls is made by placing the elliptical Whorl into a sub-division indicated by a small letter "e" being placed along side the "W" symbol of the major group, thus: W, e.



Figure No. 82.



Figure No. 83.

Observation of the salient outlines of the concentrically formed ridges of figure 82 to 85 will quickly learn anyone to distinguish the elliptical type so that it can always be placed into the proper sub-division of W, e.



No notice is taken of the core of an elliptical type, if the vertical ridges are narrow so as to present an elongated appearance it is a W, e.

If figure 82 was round instead of elliptical it would fall into the first sub-division of W. As it is a clean elliptical type, it is W, e/12/3/18. Figure 83 is an impression that would have gone into the W. l., sub-division. The many forks branching out at the bottom of this pattern causing the elliptical appearance. Figure 84 possesses compact individuality. Its forks and abrupt ends make it extra distinctive, ridges two and three, four and five, six and seven being very prominent forks. The classification reads W.e/17/7/22.

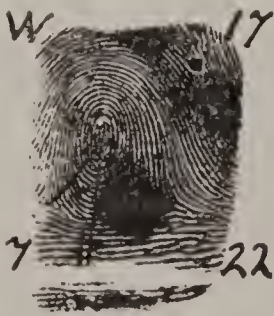


Figure No. 84.



Figure No. 85.

To set out all the details on figure 85 would take considerable time. There are over thirty points that are exceedingly good for comparison within the two deltas of this small pattern. Ridges four and five, seven and eight and nine furnish double and triple forks, which render it easy for identification.

The fifth segregation is made by placing the extra large whorls into a sub-division that is indicated by the small letter "L" following the W, symbol, thus:

W, L. This is a division created solely for the use of the larger files.



Figure No. 86.      Figure No. 86 a.

The ridges of some Whorls run so far over the side of the finger that no delta can be distinguished. As the first count will usually be over thirty, they can be placed on an Identification Chart carrying 30 + (plus) in the left corner. Their number is comparatively few in even a large file, so they will be easily located in a search. Figure 86 shows one of this type.

The sixth and last segregation is made by placing all the Whorls, no matter what type, that have a scar marring the pattern, into a sub-division indicated by a small letter s following the W of the major group. W, s. For illustrations of scarred patterns see page 62.



Figure No. 87.

Figure No. 88.



Figure No. 89.





Figure No.90.



Figure No. 91.



Figure No. 92.

### TWINNED LOOPS.

The twin loops are divided into two segregations. Twinned Loops and Twinned Loop Scars. Indicated by TL for the plain type and TLs for the scarred impressions.

Some classifiers make a practice of indicating the Twinned Loops, Lateral Pockets, and Central Pockets by using the symbol "W". Where this practice is continued, the Single Finger Print Identification System would not give satisfactory results. Not that no results would be had, for a complete search would, in all probability, find the pattern sought among the Whorls. But it would take up a lot of unnecessary time which would be lost in looking at Whorl patterns instead of the prints of the type sought. As it only takes a few seconds to trace the inside loops in order to find their exits, it will be found advisable to do so. The operator will then know for certain where a definite pattern may be found..

A double line is drawn on figure 90 to show how similar the counts are when the inner terminus present a doubt, as to which would be the right point to use in making the counts. While accuracy will always be appreciated in obtaining results, still, if a search is being made in this system; by using the same rule that is used for the little finger counts in the "Henry System", the right print will be found. If the correct count is not available when making a search, by using the above rule the right print will not be passed over, but will be found. A little practice will quickly show the searcher the soundness of the above rule if properly applied.

Although the left delta is the guide for inner, meet or outer, in a Twinned Loop, just the same as a Whorl; it does not decide the counting position for the Single Finger Print Identification System. The **nearest** delta is always the delta used in classifying for this system. The classification of figure 90 is written TL/7/18/25.

The line between the inner and outer terminus is slightly overdrawn in figure 91. Ridge three and four is an islet, while six and eight have endings near the line of count. Thus making three very distinctive points in less than a quarter of a square inch, which renders identification remarkably simple.

Figure 92 is a plain Twinned Loop. If all Composites were as easy to distinguish as this pattern, the classifier would be spared a lot of his or her daily problems, that, at times, cause a lot of worry. The forks and island between the delta also make this a simple pattern for identification. The reader will find a useful exercise in closely observing each pattern, and picking out the details that are referred to as we proceed.

By use of such detail, a description is able to be sent any distance, so that anyone may be scientifically identified from a one finger impression — without another print for comparison. Just the print that is taken at the other end of the wire. No waiting until a finger print is sent, but through the description sent an absolute identification is possible from one finger.

Figure 93 has so much detail encompassed in a few ridges, that it is difficult to decide which would best serve our object in being pointed out. The most prominent characteristic, outside the unusual tenor of the pattern, is the island in the immediate vicinity of the right delta. There is a faint outline of an islet at the inner terminus, not being a strong outline, no notice is taken of its presence. For the profession of Identification does not permit **guesses**. An identification must rest upon statement of fact.

Ridges one and two, three and four, seven and eight, are forks that bifurcate before reaching the counting position, while six and nine have an abrupt termination close to the line. The classification is written TL/10/18/31.



Figure No. 93.



Figure No. 94.



The appearance of figure 94 present a weak individual concentricity. It is by such turns and twists that physical character can be correlated, and delineated from a finger print. The short end of the inner ridge under the core, along with the short ridge of the right delta, are the prominent details for comparison.



Figure No. 95.



Figure No. 96.

Figure 95 presents a good study for porescopy—if a strong glass is used, each pore will be shown very plain. The majority are circular in shape, some triangular, and others oblong. As the cicatrix of the star-like scar is on one side, there is no need to place this pattern in the scarred division — unless done as an extra precaution. Ridges two and five bifurcate, making a fork running each way of the ridges. Ridges nine and ten have an abrupt ending, one above, the other below the counting position. The strongest feature of this pattern is the oddity of the right delta. The written classification is TL/11/11/22.

In making a search for an impression of the figure 96 type, it would also be advisable to look at it in the W,2., segregation. As the ridges make a complete circle before making an exit, this type would fall into the third sub-division. As the W,2 sub-division

is about two and a half times as large as the Twinned Loops; the number of prints is made smaller by placing such close types into the smaller division. This is one of the decisions that call for individual initiation—also dearly beloved by a certain class who delight to raise controversies which they have not the ability to settle.

Ridge six is a detail of the most decisive character for identification, for it is so rarely met. Ridge seven bifurcates just above the counting position, and twelve and thirteen is the result of a bifurcation producing a fork just below the line. Also observe the closeness of the flexure, which is a rarity. The classification is written TL/15/12/25.



Figure No. 96, a.



Figure No. 96, b.



## LATERAL POCKET LOOPS

The Lateral Pocket Loops are divided into two segregations. LP and LP,s. The small "s" meaning scarred pattern. The difference between a Lateral Pocket Loop and a Twinned Loop is comparatively easy of distinction. The two ridges that form the axis of each loop in a Lateral Pocket Loop, enter the pattern from the same side. In a Twinned Loop, the two lines that form the axis of each loop, enter from opposite sides of the pattern.

Owing to a Lateral Pocket having the same numerical value as a Whorl, many operators place the symbol "W" under these conditions when classifying. This is not suitable when using this system. It only takes a few seconds to trace the inside ridges so as to ascertain their exits. Which, once found, gives its own satisfaction in the knowledge that good technic has been employed.



The left hand delta of the Lateral Pocket Loop is disregarded in this system. The **nearest** delta is used as the counting position—no matter whether it is the left or right delta. The closer it is to the center of the bulb of the finger, the better suited it is for our purpose.

There are four operations used to classify a Lateral Pocket Loop. The following order must be used to secure consistency.

First      Decide type of pattern and which subdivision the impression falls into. Then place the correct symbols in the upper left hand corner.

Second    Count the ridges from the inner terminus to the **nearest** delta. Then place the number found in the upper right hand corner.

Third      Follow the delta line to a position vertically under the inner termini and count the number of ridges to the flexure of the joint. Place their number in the lower left hand corner.

Fourth    Count the ridges from the inner terminus to the flexure of the joint—making sure a vertical line is followed. Place the number of the ridges found in the lower right hand corner. The classification is completed.



Figure No. 97.



Figure No. 98.

Figure 97 is a clear type of Lateral Pocket Loop. If the ridge that is the inner terminal is followed, it will be found to make the lower side of the right delta. The dot on the right delta is the outer terminus. The second and third ridges are resultant of a fork, and one of the ridges of the surmounting loop bisect the second ridge. The fourth ridge has an abrupt termination above the counting line. The fifth ridge has two bifurcations below the line, one of which runs into ridge number six. Six and seven are a fork, eight is a short line, that being followed is found to break near its center. Nine has a fork below the line, eleven and twelve fork above, and thirteen is a short line. All of these points make this pattern fertile for identity. The classification reads LP/17/10/29.

The nearest delta will usually show upon a plain impression of a Twinned Loop or a Lateral Pocket Loop. When a rolled impression has been taken with very wide deltas; an additional safeguard can be made by immediately taking a plain impression with the fingers held together in a natural manner—on a separate piece of paper if there is not room on the card provided. Then individual judgment is added in allotting the impression for charting; for if the finger is being indexed for criminal purposes, chart it from the plain impression as well as the rolled one.

Figure 98 is an impression that adapts itself for easy identity, for even if the left delta was used, it would be sure to show upon a plain print. The line that is marked on this illustration, and also figure 97, is made by pressing the counter into the paper between the counting points. Sometimes it is not drawn accurately at the first try, as on 98, so the marking of another line does not obliterate any detail of the pattern. This method furnishes a positive way to make the counts accurately, because, if the line is straight it is the shortest distance between the two points wanted.

The fourth ridge has an abrupt termination above the line, while six has the same below the line. By following the delta line to the vertical position of the second count, and working toward the inner terminus, we find some additional features that assist in establishing an identification by comparison, or otherwise. When the delta line is used as a point to count from, it is never counted, but the line next to it is always number one. On the first ridge an end is found, and an extra large pore is on the second ridge that makes it look as if it had a break just above the end of the ridge below. If the ink had happened to be thick, this feature may possibly not have shown itself therefore notice should not be taken of such beguiling pores. Ridge four bisects number five. The classification reads: LP/7/10/16.

There is a sign of a small scar upon figure 99, but no cognizance should be taken of it. The small enclosure on the second ridge, and the bifurcation in the center of the pattern offer two splendid points for a quick identification. Seven and eight bifurcates above and seven ends below the line. The classification reads: LP/8/10/15.





Figure No. 99.



Figure No. 100.

The inside loop of figure 100 is broken before making a complete loop. In a core of this character, the rod farthest from the outer termini is the inner terminus. If the loop had turned slightly to the left the classification of this finger would have been the same as figure 99. Had this occurred, the two impressions would never have been mistaken for each other. Observe the detail along the line of count. Ridges three and four are resultant of a fork, six, seven and eight end above the line, with six and eight also ending below the line. Then to find more points of comparison, by following the delta line to the vertical point and working towards the I. T., we find that ridge one ends, three has an enclosure, and four a double fork. So if the counts were alike, the additional detail by a simple code over the telegraph wire would dispell any doubt in the identity of the owners of these two impressions.

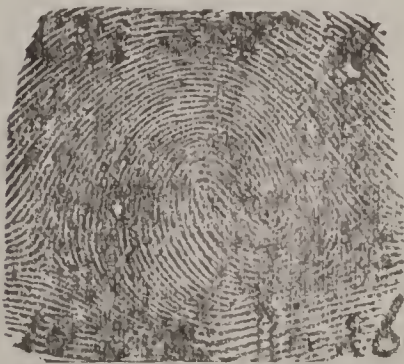


Figure No. 101.

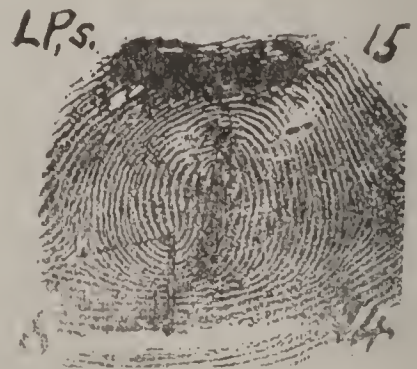


Figure No. 102.

When a cut leaves a scar that alters the conformation of the ridges, thus showing its course across the pattern, it should be placed in the scarred sub-division. Figure 90 shows a cut that does not alter the ridges beyond thickening a little at the ends. By comparing figures 90 and 97 the difference between the two scars will be observed. If figure 90 was picked up as a latent the symmetry would possibly deceive the operator, whereas, the deviation from the natural course on figure 101, would inform anyone that a scar was upon that finger. Ridge one has a fork, as are three and four, eleven and twelve, thirteen and fourteen. Nine, fifteen and sixteen end, the first and last above and fifteen below the line. Although the scar runs across each ridge of the count it does not prevent an authentic number being had: LP,s/16/10/26.

The scar on figure 102 is so plain that no one would ever have any doubt as to which sub-division it belongs. Ridges five and ten are ends, five above and ten below the line. The sixth and seventh count is resultant of an enclosure, as thirteen and fourteen also. Thus giving plenty of points to establish an identity upon. The full reading of the classification is LP,s/15/6/14.



## CENTRAL POCKET LOOPS

Although Sir E. R. Henry has given four separate and distinct standards for Central Pocket Loops, this system only segregates them into three subdivisions. First the CP,o; see figure 103 -- 4, and 115 - 16. The C P, figures 107 to 114 and the C P,s; figure 117. The deciding characters has been slightly darkened in these illustrations so as to emphasize the features.

The first sub-division is indicated by C P, o.

The second sub-division is indicated by CP.

The third sub-division is indicated by CP,s.

If the 'Henry' rule defining a Central Pocket Loop is observed, there will be no difficulty in classifying and charting these patterns correctly.

“At least one recurving ridge shall meet at right angles an imaginary line running parallel with the line of exit of the ridges”.



As the primary classification is not subject to error even if a Central Pocket loop is classified as a Whorl, or a Twinned Loop given as a Lateral Pocket Loop, many classifiers labor under the impression that it does not matter. But it does matter. For there are many exchanges that are based upon the individual unit system which do not exchange the print itself, therefore confusion is caused and error arises.

0	0	17	I	14		0	0	17	I	14
TL	CP	\	CP	\	25 - 14	W	W	\	W	\
16	9	15	I	15	18 rR 15	16	9	15	I	15
\	\	/	LP	/		\	\	/	W	/

The diagram shows how this confusion is caused. Anyone would hesitate to make an identification with this difference in the symbols.

As the author is personally acquainted with classifiers who daily repeat this practice, thru not taking time to use the pointer to trace the ridges, it is hoped that this word of caution will serve to save others from the habit of using lax methods. By always using the pointer when in doubt about any particular pattern, this error — and many others, — will be avoided.

Central Pocket Loops are a splendid aid in establishing identification. There are always so many strong individual traits that make each pattern so distinctive. Figure 103 possesses 36 separate points of comparison in this small pattern. As the counting delta — the nearest — is frequently too close to the inner terminus to furnish many descriptive points for a code, the ridges between the inner terminus and the outer delta may be used for descriptive identification. On this illustration, Figure 103, there are 15 ridges between the I. T. and O. T. There are bifurcations making a fork on ridges 1, 2, 3 and 4. Ridges 6, 7 and 8 are resultant of a fork, and also an enclosure, the combination of these two details causing three ridges where ordinarily only two would be found. 9 and 10, and 11 and 12 are from a fork just above the line. 15 ends above, and 12 has an enclosure below the line. Thus giving ten very strong details in a very small area. As there are only five ridges intervening between the I. T., and delta line the classification is written CP.o./5/13/18.



Figure No. 103



Figure No. 101.

With the first glance at figure 104, there does not look to be a great deal that would serve for identity, if an exception is made of the three inside ridges. The

enclosure on the 4th ridge, and the crossed ridges to the left of the pattern are unmistakable peculiarities providing ready recognition from the bifurcation that is the nearest delta to the center of the core. Only one ridge intervenes. Yet on making the third count, there is a difference of 3 counts. Which is caused by the first count running through the bifurcation before it has separated from the original ridge.

If a count is made from the inner terminus to the farthest delta, where the dot is an outer terminus, 12 ridges are found. 4 and 5 are a fork above, and 8 and 9 fork below the line. An enclosure is below on the 4th ridge, 9 and 10 are parts of the enclosure, while 6 and 7 above and 11 below the counting line. Giving seven definite points that can be transmitted by a telegraphic code, that will, in conjunction with the classification CP,o/1/12/15 provide unmistakable identification.

If only one finger is printed and it is recorded which finger the classification belongs, with the aid of the "Galton Details" the finger can be identified by descriptive code anywhere — by just taking an impression and comparing it with the description. No waiting for a set of prints to arrive to be certain it is the right person. You may search the world over, but you will not find another person with the same pattern, the same number of ridges, and the same arrangement of these four details **upon the same finger.**

There is just one rule that must be rigidly observed. The type of pattern must be accurate. It is in segregating the patterns that most mistakes are made. Figure 105 is an example. It was cut from a card



classified in one of the leading identification bureaus of this country. A bureau that is up—to—date in all its work and has a system that is held as a pattern to copy. The original classification on this figure has been left undisturbed.

The fact that the Central Pocket Loop has the word loop as a part of its name, shows that this type is a deviation of the Loop pattern. So it follows that some of the ridges must have a semblance to a Loop. In figure 105 there is not even one ridge that has any appearance of a Loop. As the formation of the one complete ridge is circular, with two well defined deltas, this impression must be a Whorl with a classification of W/2/16/19.

Figure 106 was also found classified as a CP. Examination with the pointer will quickly show the difference. The inside ridges have been darkened for emphasis. Compare figures 103—4—7 with 105—6. The majority of the ridges are a distinct Loop type, whereas the Arch predominates in the Whorls—being a Whorl by reason of the circular formation of one ridge only.



Figure No. 105.



Figure No. 106.

The recurving of the innermost ridge automatically places figure 107 into the CP division. If there were two prints of this finger before an operator for comparison, no doubt would arise as to the identity. The plain impression is also shown so that the reader can see the policy of taking the second count from the nearest delta. On a search being made for this print with a latent, or a plain impression as a guide, if the second count was taken from the left delta, its position would have to be guessed at. But by using the nearest delta all counts are quickly had.



Figure No. 107.

One look at this print and we know it will be found on the second chart. On the other hand, if we had to guess the position of the delta, so as to commence making a first and second count, a lot of time would be wasted in looking on different charts to locate this impression. The nearest delta as a guide is the best possible permanent position to make the first and second counts to or from.

The nearest delta of Figure 107 is a long distance down what may be termed the central ridge—it is blackened so that it may stand out in the reproduction.

A line from the center of the bifurcation to the end of the short rod pointing to the exit, discloses that only two ridges are crossed by this line. The line that bifurcates, being the delta, is also the delta line that is traced, as it runs into the lower ridge it is followed to a point just above the fork, where the second count of 19 is taken. Then counting from the I.T. 3 more is found and added to the 19; giving a classification of CP/2/19/22.

If an extra description is needed a count between the I. T. and the outer delta gives 19, with a fork at 5 and 6 — 12 and 13 above the line, a fork at 9 and 10 below the line. The ridges end above the line on 17 and 19, and below on 4—6—12—15—17—18. An enclosure is on 8 below the line. To observe well this pattern and check up the location of these details is good exercise, as well as training for the eye.



Figure No. 108

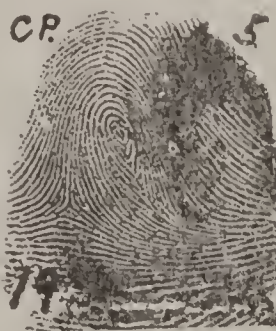


Figure No. 109.

'Henry' gives CP's by standards, figure 108 is a type that would fall under the IV standard. The very small ridge at the left delta is the O. T. and the point of the short down thrusting ridge at the core is the I. T. A count of 11 is found between these two points. There



is plenty of detail along this line of count, but to keep the system consistent, one and the same position must be used at all times. So when an extra description is needed, it must be the rule to obtain the description from between the I.T. and the farthest delta on a **Central Pocket Loop**. This rule will not apply to any other pattern. A count is taken first, on this figure, 24 is found. F,a/5 & 6/13 & 14/19 & 21. E,a/17/22/24. F,o/2/9 & 10/19 & 20. F,b/7/8/11/14. E,b/17/18/19/21/23.

It is customary for finger print operators to use abbreviations when classifying. To familiarize the reader with the symbology used to describe the details, we will use the abbreviations to describe the remainder of the illustrations. A full list of all symbols, letters etc., will be found on pages 120 to 124.

The indecision and wavering of the ridges on Figure 109 show tendencies of a vacillating type. A conclusion that is strongly supported by the unsettled condition of the core. This is a type of pattern that causes a divergence of opinion. If this impression was enlarged, one side of the two bifurcations would be found to be right angled. The I. T. is the top of the short ridge in the center of the core. O. T. is the first Bi. of central ridge, giving a count of five. As the R. D. line runs into the ridge above, it is followed along this ridge until arriving at a vertical point under the I. T., where the 2nd count of nineteen and the 3rd count of twentyfour is taken.

If an additional description is needed, the L. D. has a count of 12, with a F,a/3 & 4/6 & 7/8 & 9. E,a/11/12. F,o/2; E,b/11, all of which are written in the order given:

First. Indicate whether right, or left delta and the number of ridges to the I. T.

Second. Indicate the forks above the line of count. If two ridges that are counted have their source in the fork, place an "and" in between the two numbers, as above F,a/3 & 4/6 & 7/8 & 9. If the fork runs upward, there is only one line counted, so give the number it is, always counting from the I.T.

Third. Indicate the ends above the line of count, the Enclosures and Islands also, in given order.

Fourth. Indicate what Forks, Ends, Enclosures or Islands are upon the line, in the order given.

Fifth. Indicate the Forks, Ends, Enclosures or Islands that are below the line, in the order given.

This order is simple and easily memorized, first all the details that are **above** the line. Second, all the details that are **on** the line. Third, all the details that are **below** the line.

The 8 individual details of Figure 109, with the pattern, will not be found on the same finger of any other person. So the pattern, the Classification, and description, all combine to furnish a means of scientific identification without having to forward another finger print for comparison. Just take an impression

of the finger and check up the counts, and detail, is all that is necessary to be certain of the person's identity.

This extra description is not necessarily a part of Single Finger classification. The addition of the "Galton Details" is solely a means for confirming an identification by telegraphic code when there is no print present to make a comparison, instead of waiting days for one to arrive by mail. Thus the identity is established in an hour or so over the wire.



Figure No. 110.



Figure No. 111.

Figure 110 is a CP with specific features, showing a determined course, with no wavering but a fixed purpose of continuing until a deciding point is reached. Thus do the ridges express physical character. The I.T. is at the right side of the reconverging ridge that makes an almost direct tangent to the O.T. The L.D. has a count of 8. F,a/2 & 3/4 & 5 & 6; E,a/7; F,b/5 & 6/7 & 8; E,b/3. Six descriptive points that will not be duplicated on another CP/3/19/21, if it can be found.

,  
, ,  
, ,  
, , ,



Figure 111 is another standard IV type. The I.T. is the top of the small inside ridge. The O. T. is the small v shaped ridge at the right Bi. The regular classification can be reinforced by the addition of L.D, 21; F,a/3 & 4/5 & 6/7 & 8/9 & 10/13 & 14 & 15/18 & 19/20/21; F b /3/4/5/6 & 7; E b 14/15/18/19/21. Making 18 distinctive traits in all. With so many details, it is not necessary to use all of them. Two or three of each would be sufficient, and by placing a plus mark at the end of what was given would answer every purpose. E. R. D.

L.D.21; F,a/3 & 4/5 & 6+; F b/3/4/5/+; E, b/14/15/+.



Figure No. 112.



Figure No. 113.

The dot line between the first and second counts on figure 112 is the most distinctive detail in this pattern. The rarity of such enhance the value. The position of this dot adds one more count to this classification of CP/3/19/21. If needed, L. D. 11; F,a/3 & 4/10 & 11; E,a//2/7; F,b/5 & 6/8 & 10;; E,b/3/9/11; can be added.

If the contour of the loop ridges were disregarded in figure 113, this impression would be a W,1. But

as a majority of the ridges are plainly loops, it is a Central Pocket Loop. The regularity of the ridges prevent a large display of detail, but a close look will disclose enough points to establish a scientific identity, with the aid of the regular classification. L.D.25; F,a/3 & 4/8 & 9/19 & 20; F,o/10; F,b/3/4 & 5/6/11 & 12; E,b/7/20. Ten extra details that will not be duplicated in another CP with a count of 6/22/27.



Figure No. 114.



Figure No. 115.

Figure 114 possesses a singularity that adds individuality to a plain type. The I. T. is the short irregular ridge in the center, the second ridge being flattened just above the bisecting ridge, is the feature that places this impression in the CP subdivision. An analysis of the details show; L.D. 15; F,a/3 & 4/8; E,a/1/7/9/14; E,o/15; F,b/1 & 2; E,b/6/9/11/14. Showing 12 indisputable points for identification.

The dot in the center is the I. T. on Figure 115. A line is scratched on the plane of exit, and another line at right angles below the ridge that places this impression in the CP class. The other two ridges meet the axis at an acute angle. The rule that

must be observed in classifying a Central Pocket Loop is "At least one ridge must meet the line of exit at a right angle". If this rule is adhered to there will be no difficulty in defining the type correctly. The small drawn circle shows the O.T. of the nearest delta. The differentia shows strong mannerism, as well as evenness in regularity. The extra descriptions although small, are well defined, reading L.D. 8; F,a/2 & 3/7 & 8; E, a/5; F, b/3/8; specifying an assortment of five details that will not be repeated on another similar pattern on the same finger.



Figure No. 116.



Figure No. 117.

The CP,o. 5/15/18 is rich with points for comparison, there are nearly 50 in this small pattern. But it is not at all necessary to give each one. The few between the left delta and the I.T. will be more than sufficient for our purpose. L.D. 17; F,a/4 & 5/6 & 7/9 & 10/12 & 13/14 & 15; E,a/16; F,b/2/3/9/13 & 14/15 & 16.

The scarred pattern, Figure 117, is easy to classify as the scar does not interfere with either delta. All the extra description that would be needed for this finger would be the position of the scar. Count first from I.T. to the scar, then from L.D. to scar. The full reading would be: CP,s. 7/16/22; O.T.4. If more detail was wanted there are five points between the I.T. and the scar that could be supplied.





## ARCHES

It is not probable that an arch will be found with undulating ridges at an equal distance from each other, or one that possesses no bifurcations whatsoever. The author has never seen one. At what may be termed the core, which is the narrowest part of the arch proper, there is always some distinguishing characteristic of the ridges that will make that arch different from similar patterns.

These individual details enable us to separate the plain Arch patterns into three sub-divisions. The first is indicated by "A,i." The second by a plain "A." And the third by "A,s." for scarred patterns alone.

When the eye is trained to observe the full details of a finger impression, the available minutiae of the Arches will form ready means of identity. These instructions in Single Finger Identification have been

carefully written to exercise the readers eye to observe the salient attributes of the patterns; so if attention has been paid to each of the illustrations it will be easy for the reader to pick out the counting positions on the Arches.

Three counts are taken of an Arch to supply a classification and permit charting; just as the other patterns. But there is this difference. Natural deltas are a stable part of a Loop, Whorls and Composites, furnishing a fixed working position. Whereas, the ridges of an Arch cross the finger in undulating lines that have no deltas at all. As Finger Printing is a to identity. For science is classified knowledge that science, we cannot go outside the patterns for aids explain facts. So we have to confine our attention to the actual impression itself and what it shows. The varied and concise details that show when a finger is printed is all that can be used.

After a thorough search, three details were found that consistently repeated themselves on the Arch patterns, which would enable three counts to be scientifically made so that an Arch could be properly classified and charted.

Upon a close examination, a large number of the

Arch type will be found to have an enclosure about the center of the pattern. Some impressions will have several of them. When such is the case, either use the largest enclosure or the one nearest the flexure of the joint. These enclosures are called an island when found upon the Arch pattern, so as to avoid confusion with the Accidentals.

There is an enclosure in the center of figure 118. The island itself, has only two bifurcations. These two are used for two of the counts, so a third point is necessary for another starting position. Looking above the island a bifurcation is observed on the third ridge right over the two bifurcations. This will serve for the first counting point. Placing the counter directly upon the bifurcation and dropping down to the next ridge, it is counted as a number one (1), which is followed and numbered to the flexure of the phalanx. A vertical line is kept throughout the counting process, marked "A" on figure 118.

Then placing the counter on the left bifurcation of the island, commencing with the ridge below as number one (1), a second count is made to the flexure, in a straight line at an angle of about 30 degrees. Marked "C" on figure 118.

Then placing the counter on the right bifurcation of the island, commencing with the ridge below as number (1), a third count is made to the flexure, in a straight line at an angle of about 30 degrees. Marked "B" on Figure 118.

This supplies three separate counts that enable the impression to be correctly classified and charted, so that it can be located in quick order. If it is necessary to identify this finger by telegraph, the extra detail would be had as follows:

Place the glass so that the line on the foot of glass is vertically in the center of the island. Count the number of ridges from the ridge



directly below the island to the bottom of the joint. Then observe what Forks, ends, or islands are on the left side of the line. When the left side is exhausted, do the same on the right side of the line.

On figure 118 the details read: 17/F,L/ 1 & 2/3 & 4/5 & 6/8 & 10; E,L/5/8/11/13/14; F,r/ 7 & 8/9s & 10/10 & 11; E,r/1/2/3/4/7/12.

Here are nineteen scientific points for identification that will not be repeated in another Arch on the same finger. If more detail is wanted, by marking a line through the center of the impression all the detail upon this, or any other pattern could be outlined with accuracy. But it is not at all necessary. From six to twelve points along with the classification will identify anyone by telegraph—and no waiting for a finger print to make a comparison with.

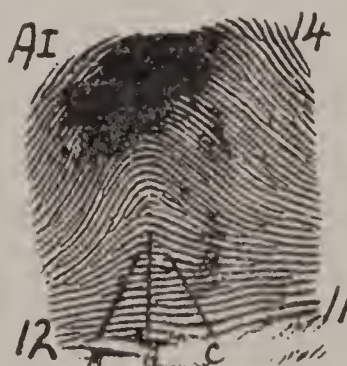


Figure No.. 118.

Figure No. 119

There are no less than three islands on figure 119. As the lowest island is large enough for our purpose, it is used because in a good position for classifying and charting. The first bifurcation above the island is a smaller island. This will act for the first counting position. Dropping the pointer to the top ridge of the island, it is counted as number one (1), and

followed straight down the flexure, giving a count of 14. On taking the second count, the first and second ridges look as if they were on an island also, this is because the drawn line just touches the second ridge. By looking at the illustration with a strong glass a clear space will be observed between the line and first ridge. As the drawn line touches the end of the second ridge, it is counted as number two on the journey to the flexure. The drawn line illustrating the third count runs directly through the bifurcation of ridges one and two, so both are counted on the way to the flexure. For an extra description of this impression the first counting line can be used, but only count from the third ridge which is the first one under the island that dominates the counts 12: C,a; F,L/9 & 10/12; E,L/1 4/6/12; F,r/1 & 2/3 & 4; E,r/1/3/6/7/9/11. Fourteen details that will not be repeated on another Arch classified as A,i/14/12/11.



Figure No. 120



Figure No. 121.

The line "A" on figure 120 is not complete, but commences on the fourth ridge. The arrow points to the first bifurcation above the island that is used for the second and third counts. If a small bisecting line had been to the right on ridges 5 and 6, an island would have formed directly in the center of the pattern. But we are dealing with facts. So only the

lines that are recorded can receive notice. No guesses!, no 'might have been's'. Just plain statement of fact of that which shows upon an impression.

The bifurcation on the second ridge above the island is the starting point for the first count to the flexure. Line "A" gives 17. From the left bifurcation of the island, counting at an angle of 30 degrees line "B" gives 11. From the right bifurcation, counting at an angle of about 30 degrees, line "C" gives 13; making a classification of A, i/17/11/13, and can be supplemented by the details found crossing the line "A" as drawn. F, 1/ 9 & 10/12 & 13; F, o/ 1 & 2; S, 6; F, r/2 & 3 & 4/ 8 and 9; No need to take any more as these are very distinctive, and search as anyone may, they will not be found upon the same finger of another person bearing an arch of this type.

The strong flattened ridges of figure 121 show signs of hard manual labor. There are two islands on this pattern. The one nearest to the flexure is too small, so it is ignored, in favor of the larger island on the sixth ridge above. The reader will benefit by closely observing the details on any, and all arch types. For it will take practice to quickly find counting positions on these patterns. In using the word "quickly", it does not necessarily mean that haste should be employed. It should not. Identification is a serious business with, very often, the difference between life and death resting upon a decision of identify. But the up-to-date operator will so train his eye that the salient points of a pattern are registered with the first look. Which will show real efficiency in his chosen profession. As a supplement to the classification of Figure 121, F, L/4 & 5/4, 5 & 6/6; S, 2; F, r/4 & 5/ 8; I, 6; can be added when necessary.



The second segregation of Arches are the most difficult patterns to classify. Only by diligent search of the impression can anything be found to hang a classification upon. This sub-division consists of the Arches that have no island upon them at all. The bifurcations have to be relied upon entirely. After analyzation of several thousand patterns of this class, a contingency in the bifurcations was found that enable classification by numbers.

Somewhere about the center of most of the impressions, a short bisecting ridge connecting two ridges will be found, like a fork from the upper ridge to the one below. Making a double fork with its prongs running each way. The drawn lines "B" and "C" on Figure 122 are pointing at this characteristic.

Each of these bifurcations make a stable position from which a count can be had. When this detail is found, the nearest bifurcation **over** it, will act as a starting point for the first count. Line "A" is on the right side because the nearest bifurcation over the double bifurcation happens to be on that side. The three counts give a classification of A/27 14/24. If additional detail is required, the details under the second and third counting positions can be enumerated as being on each side of an imaginary line vertically under the commanding position. With the count taken from the first ridge under the double bifurcations. 19; F,L/2/5 & 6/7 & 8/15 & 16; F o/11 & 12 F,r/8 & 9/9d. There are more details but as the drawn lines interfere, we will not try to read that which is hidden. Six details along with the classification are sufficient to make identification certain.



Figure No. 122.



Figure No. 123.

The counting position of the second and third counts are slightly different, as the top ridge is a very small one. An S, indicating a short line which is a rarity. There are two bifurcations close together. The first counting point is on the third ridge above, a ridge that also has two bifurcations. As the lower double bi. are closed and more in the center of the impression, they are used. With the bi directly over the 2nd and 3rd counting position as the starting point for the first count. A dot is placed on each of the bi. and line "A" is broken so that none of the detail are hidden. The class. reads A/16/11/15. With 13; F, L/2 & 3/3 & 5/7 & 8; F,r/1/5 & 6/11; added. If more detail was needed the short ends could be enumerated.

The next illustration shows another kind of double bifurcation. If the fork at the top of the line "C" had continued its course downward, it would have formed an island almost in the center of the impression. But having to accept the fact as it shows upon the paper, a double bifurcation had to be sought. On the 6th and 7th ridge from the flexure, between lines "B" and "C" there is a short ridge bisecting two ridges; but it is too near the bottom of the phalanx for general use.



Figure No. 124.

Not finding any more suitable detail other than the two upward thrusting bifurcations on the 11th ridge, they have to be utilized for counting. The first bi. above the double counting position is so high--if we insist in locating one directly over the core--that it is preferable to work a little on one side and take the first bi. that offers. So a count of 12 is found at "A"; 9 at "B"; and 10 at "C". This pattern is exceptionally free of detail, as well as being a type that is very rare. (Which is the reason for including it as a guide) A great deal of individual initiation and ingenuity will have to be exhibited in classifying Arches of this type. As the number of this type will amount to less than one per cent of the whole file, if any mistakes are made, they will be hardly noticable. Not that mistakes are to be tolerated--far from it. If the operator will persistently practice classifying, charting, and finding this type of Arch, in a short time a proficiency will be attained that will make this type as easy to find as a simple loop. Several enlarged Arches are illustrated with the classification for the reader to find the counting positions.

If a detailed description of the enlarged patterns was necessary, the following would aid in completing identification.



“A”; A/14/14/13; 12; R,L/7; F,r/1&3/2&3/4&6 / 5&6 / 7&8.

“B”; A/22/17/17; 19; F,L/2 & 3/6 & 7/10 & 11 /13&14 / 15&16; Fr / 8&9 / 13 / 13&14.

“C” A/19/15/15; 16; F,L/1 & 2; F,r/4 & 5/6 & 7/10 & 11.

“D”; A/24/14/15; 18;F,L / 9&10; F,r / 2&4 / 8&9 9 & 10/13 &14; S, 3.

“E” A/20/13/14; 18; F,L / 6&8 / 14&15; F,r/1&2/3 & 4; 5, 9.

“F” A/13/12/14; 18; F,1/5 & 7/8/9 & 10; F,r/5/7 & 8/10 & 11; S, 4/16.

“G”; T/11/13/15; 11; F,L/ 3&4 / 4&5 / 5 & 6; F,r /1 & 2/4 & 5/7 & 8; C, 4 & 5.

F,r/1 & 2/4 & 5/7 & 8; C,4 &5.

“H”; Ac/5/14/20; F/1/2/3; C,4 & 5.

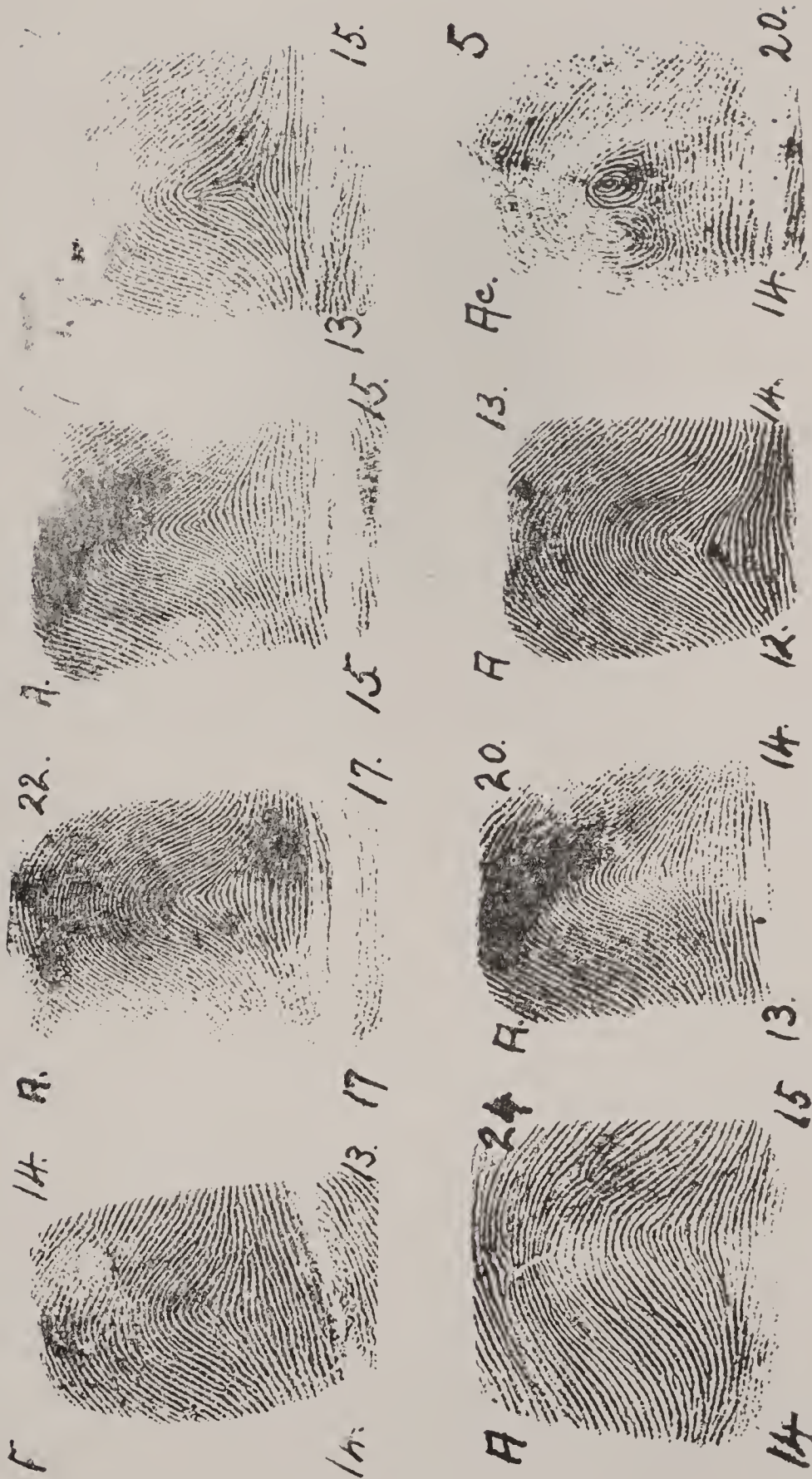


Plate 5



## TENTED ARCHES

The Tented Arch counts are based upon the figure of the pattern. The first count is taken from the bottom of the pole ridge from which the name is derived—usually in the center of the pattern. It is always the middle line on this type. The second and third counts are had by extending an imaginary horizontal line across the top of the pole ridges, thus forming the shape of a “T”. The arms of this “T” extending across as many ridges as there are counts from the first ridge that passes over the pole, to the foot of the pole; taken by following the first arch to bottom of pole and counting over to the foot of pole ridge.

On Figure 125, a small dot is at the foot of the pole ridge. From the dot to the first ridge that passes over the top of the pole, are four intervening ridges on the left side. From the top of the pole, the imaginary arm of the “T” crosses four ridges. The fourth ridge is the starting point for the second





Figure No. 125.

count, which is 17. On the right side, there are three ridges between the dot at the foot of the pole to the first ridge that passes over the top of the pole, so the right arm of the "T" crosses three ridges to the third counting position and a classification of T/17/17/15 is made.

If additional detail should be necessary—which will be very rarely wanted; the minutiae that is found to the left and right of the first counting line, can be enumerated.

Figure 126 has a black dot placed at each of the starting points of the three counts. The classification is, T/13/17/20; F,L/1 & 2/3 & 4/5/9 & 10; F,r/6&7/7&8/. Six details in all, which is quite sufficient for scientific purposes.

There is an arrow pointing to the second and third counting positions on Figure 127. The classification of T/13/16/19; can be supplemented by E,L/1/4/9: F,L/2&3/5&6/9&10; E,r/1/6/9/10; F,r/4&5



Figure No. 126.



Figure No. 127.

It is not advisable to take any regard of the short pole when running the arms of the imaginary pole over to make the second and third counts. Always carry over from the top of the longest pole ridge, and then count vertically downward. See Figure 128, in which the pole ridges vary in height, there being two extremes, one short and the other long. The classification of T/8/14/10 can have the following accessory: C, 1&2; F,L/4/5&6; F,r/1&4.



Figure No. 128.



Figure No. 129.

## ACCIDENTALS

In charting Accidentals no rigid rule is applied. As the near--Accidental is so vacillating in outline, there is generally a doubt in the classifiers mind as to just what pattern it should be termed. Some have had patterns before them that did not look in any way similiar to the different compound patterns that are illustrated in the instruction books, so a symbol of "C" was used to denote a Composite instead of an Ac. for Accidental.

As a regularly appointed committee is now working on such problems, the author has decided to include an extra Identification Chart with this system, which will be headed with the symbol "C" to be used as the classifier may see fit. In this way we will be forestalling the committee's decisions and be prepared to receive them so that the system will be worked alike by everyone using it.



The same manner of making a classification on a Whorl or Twinned Loop is used to make one on the Accidentals. But when a pattern of three deltas, like figure 130 or 132 comes up individual judgement is called upon.



Figure No. 130.



Figure No. 131.

If the importance of using the delta that is nearest to the center of the finger is kept in mind, there will be no difficulty in locating any Accidental that may be on the Identification Charts. By this time the reader should be able to classify these patterns, so the actual work can be done on the illustrations and the result tallied with the following:

Figure 129 Ac/5/15/20. F,a/3&4. C,b/2.

Figure 130. Ac/6/12/19. F,a/6. E,a/3/4/5. F,b/5&6.

Figure 131. Ac/7/18/24. E,a/7. F,b/2&3. S/1. C/4&5.

Figure 132. Ac/10/14/21. F,a/1&2&3/7&9. E,a/8. C/5&6. F,b/9&10.

Figure 133. Ac/11/10/21. F,a/1/2/9&10. E,a/4/7/9  
10. F,b/3/6&7/9&10.



Figure No. 132.



Figure No. 133.



Figure No. 134.

# SINGLE FINGER PRINT IDENTIFICATION SYSTEM

## TECHNIC

Symbol	Representing
--------	--------------

R or \	Right slope Loop
--------	------------------

U or /	Left slope Loop
--------	-----------------

W	Whorl
---	-------

TL	Twinned Loop
----	--------------

LP	Lateral Pocket Loop
----	---------------------

CP	Central Pocket Loop
----	---------------------

A	Arch
---	------

T	Tented Arch
---	-------------

Ac	Accidental
----	------------



IT	Inner Terminus
OT	Outer Terminus
I	Inner
M	Meet
O	Outer

### DESCRIPTIVE NOMENCLATURE

Symbol	Representing
ND	Nearest delta
LD	Left delta
RD	Right delta
Bi	Bifurcation
ID	Inside the delta
OD	Outside the delta
OLD	Outside the left delta
ILD	Inside the left delta.
ORD	Outside the right delta
IRD	Inside the right delta.

OvLD or OvRD, Over left or right delta as case may be .

UnLD or UnRD, Under right or left delta as case may be.

I            Island

Fa           Fork above a straight line between the IT & OT.

Fo           Fork upon a straight line between the IT & OT.

Fb           Fork below a straight line between the IT & OT.

dFA          Double fork above a straight line between the IT & OT.

dFb          Double fork below a straight line between the IT & OT.

Ea           Indicating the end of a ridge above the line between the IT & OT.

Eo           Indicating the end of a ridge on the line between the IT & OT.

Eb           Indicating the end of a ridge below the line between the IT & OT.

C            Enclosure caused by a double blfurcation, or two forks on the same ridge.

Ca           Enclosure above the line between the IT & OT.

Co	Enclosure on the line between the IT & OT.
Cb	Enclosure below the line between the IT & OT.
dCa	Double enclosure above the line between the IT & OT.
dCb	Double enclosure below the line between the IT & OT.
Ia	Island above the line between the IT & OT.
Io	Island on the line between the IT & OT.
Ib	Island below the line between the IT & OT.
dIa	Double island above the line between the IT & OT.
dIb	double island below the line between the IT & OT.
S	A very short ridge.
Sa	Short ridge above the line between the IT & OT.
So	Short ridge on the line between the IT & OT.
Sb	Short ridge below the line between the



D	Small mark of a ridge called a Dot. IT & OT.
Da	Small dot above the line between the IT & OT.
Do	Small dot on the line between the IT & OT.
Db	Small dot below the line between the IT & OT.
Ov	Over
Un	Under.
Bt	Between
Be	Besides
sc	Cicatrice, scar
Cr	Crease.

## USING THE CROSSKEY IDENTIFICATION CHARTS

Aproximately two thirds of every file are Ulnar or Radial Loops. A fact that made the problem of identity by single fingers a complex one. This problem has now been swept away by the Single Finger Print Identification System. The past tense is used here with a definite aim in view which will be explained briefly.

Finger Prints are being used, and will be used, as a protective agency for Society. They were adopted, by the Police, in the first place, as a protective measure to isolate the criminal element of Society. For by taking the finger prints of every person arrested, an established identification was given to the offenders of Society's mandates---the law. So when an old offender came before the judge, the history being known; the judge was able to discriminate in passing the sentence. For all are agreed that the first offender does not merit the same treatment as one who has committed the same offense over and over again.

Protective measures will be needed even more in the future than today. Life is running on high gear. The world's pace is faster. Invention has brought many things to use that has completely altered our mode of living, and our thoughts. Society does not

progress without paying a price for the advance made. The price being paid today for the quickened vibration of so called civilization, is seen in the increased number of inmates of the insane asylums, jails, penitentiary's, and poor-houses--and also the 'slums' in the crowded centers of population.

When the number of youths, and girls, that are daily brought into the courts are considered, and when, after the judges have done everything humanly possible to save sending these young people to prisons, they finally have to send them to prison because of renewed offenses; it is very evident to the clear minded, that there is something wrong in the way these boys and girls are trained.

We are dealing with facts in the science of finger printing. So we view this fact; the problem the youth today presents, and offer a protective agency to all who are wise enough to utilize it.

These things are only hinted at, because a technical work of this character is no place for a discussion of them. But "the handwriting on the wall" says, business will have to adopt every precaution and apply such protection as can be had.

Owing to the predominance of the Loop patterns in the file the largest amount of attention is given to Loops in this system; with the results, that the Loops are the easiest pattern to find if the individual characteristics have been properly observed. If the classifying and charting are correctly performed, there will be absolutely nothing to prevent each and every



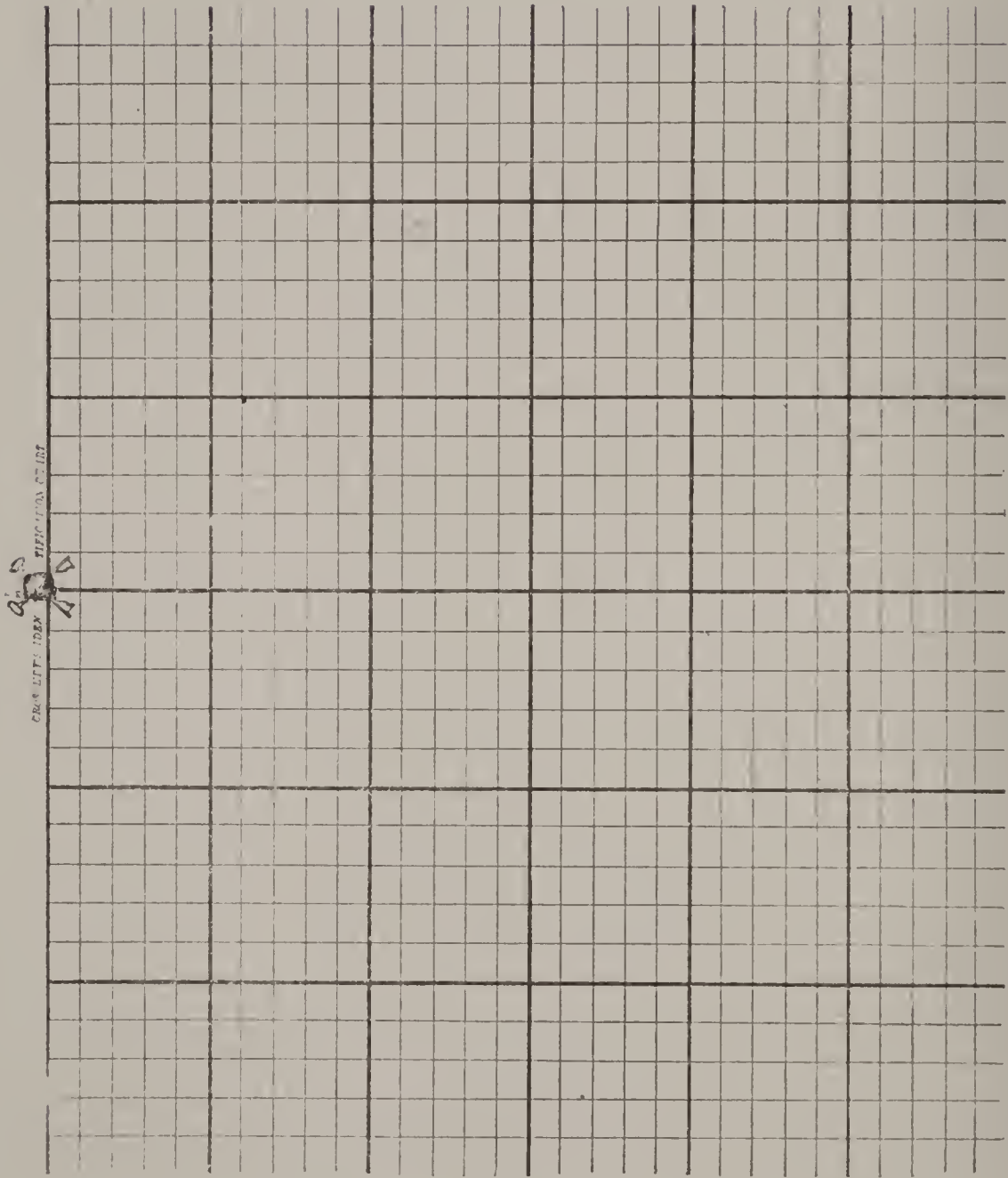
finger print in the file being identified in a few minutes at any time it happens to be wanted.

The separation of the types of the patterns being accomplished so that each one could be registered, the next problem was how to register them so that one could be immediately located if wanted. Seeing that each finger impression had so many attributes, this was not readily answered. It was only after long, and repeated experiments, that the answer was supplied.

To count the ridges between two points is simple--but in trying to index or register finger prints, this single count was useless because of the repetition of the same number. Then two counts were tried, only to find the sameness of repetition again. This repetition of the numbers would necessitate so many records having to be drawn from the file in course of a search; so the two counts had to be abandoned, and three counts were tried successfully.

Finding three counts that would prove consistent, and, at the same time, supply a numerical progression, the Crosskey Identification Chart was devised so that each impression would fall into a limited zone or area. Plate 6.

So that the reader may see how easily a finger print record may be charted, we will register a few prints with details.



The Single Finger Print Identification System is comprised of a plurality of the Crosskey Identification Charts. The segregations of the patterns are known by a symbol which is placed upon each of the thirty (30) charts to make the sub-division. There are thirty six (36) sub-divisions in all, as follows:

R.	Numbered	from	1 to 30
R,1.	”	”	1 to 30
R,2.	”	”	1 to 30
R,x.	”	”	1 to 30
R,z.	”	”	1 to 30
R,i.	”	”	1 to 30
R,s.	”		1 to 30
U.	”	”	1 to 30
U,1.	”	”	1 to 30
U,2.	”	”	1 to 30
U,x.	”	”	1 to 30
U,z.	”	”	1 to 30
U,i.	”	”	1 to 30
U,s.	”	”	1 to 30
W.	”	”	1 to 30



W,1.	”	”	1 to 30
W,2.	”	”	1 to 30
W,e.	”	”	1 to 30
W,l.	”	”	1 to 30
W,s.	”	”	1 to 30
TL	”	”	1 to 30
TL,s.	”	”	1 to 30
LP	”	”	1 to 30
LP,s.	”	”	1 to 30
CP.	”	”	1 to 30
CP,o.	”	”	1 to 30
CP,s.	”	”	1 to 30
A.	”	”	1 to 30
A,i.	”	”	1 to 30
A,s.	”	”	1 to 30
T.	”	”	1 to 30
T,s.	”	”	1 to 30
Ac.	”	”	1 to 30
Ac,s.	”	”	1 to 30
C.	”	”	1 to 30
C,s.	”	”	1 to 30

234

Ledger Vol. 3..

NATIONAL CITY BANK

Albert E. Clark  
signature

Finger Print  
Classification

LP. 12/13/26.  
Fa. 344/647/119/12. Cb. 7  
Fd. 849.

L. Index Finger.

LP.

12



13

26.

Business. Sailor

Address. 748 E. Street

Remarks

For keying purposes, there are two kinds of key cards. One for use where ten fingers are registered in this system, Plate No. 8; and the small 3 x 5 card already used for name, and numerical systems for business purposes. Plate No. 7. To create a chart that would permit more than a keying space was out of the question—it would prove unwieldy, and too large for filing purposes. When a single finger print is used for business purposes, the usual 3 x 5 card may carry the impressions, without any alteration of its present uses.

If it is an ordinary Finger Print Record that is to be registered, the separate classifications will be first made, and then a key number given to the print. This done, it is ready for registering in the Single Finger Print Identification System. Plate No. 9. is a print that has a classification reading

$$\begin{array}{rccccr} 1 & U & I & I & & 7 \\ \hline 1 & U & I & I & & 8 \end{array}$$

it may be registered by the following process.

First. Each of the patterns are carefully regarded so as to place each type in the proper subdivision or segregation. The right thumb of Plate No. 9. has a single rod running up the center of a well defined right slope loop, so R,1., is written in the upper left hand corner. The middle finger also calls for an R., right slope Loop, so a R, is placed in the upper left hand corner. The middle finger also calls for a R., while the ring finger has a single rod in the center, making it a R,1. to be placed in the proper corner. The little finger has a R., placed in the upper left hand corner.





Starting with the left thumb, the same work is done with the lower row of impressions, regarding each digit in the same regular order and placing its type in the upper left hand corner. The print is then ready for the counts to be made.

Commencing with the right thumb, the first count between the Inner Terminus (IT) and the delta is made. 13 ridges intervene between these two points. Then following the delta line to a point vertically under the Inner Terminus, the second count is taken; it is 7. Then counting from the Inner Termini to the flexure of the joint, the third count of 17 is obtained. The second count of 7 is placed in the lower left hand corner of the impression and the third count of 17 is placed on the right hand side .

The index finger is next in order. The first count is 3. The second count is 7, and the third count is 11, all of which are placed as shown on Plate No. 9. Passing along to each finger in turn, going from the right little finger to the left thumb, and following each row of impressions in regular order, it takes but a short time to prepare a finger print record so that the number of ridges may be registered.

Now this print is ready to be registered on the Identification Charts. Pulling the 13th chart of the R,1., segregation, the eye travels to the second row beyond the first heavy line; which is the seventh vertical column. Picking out the third heavy line downward, we count two zones below it, this is the 17th horizontal zone. In this zone, known as the 7th vertical and 17th horizontal zones; the key number is placed. Before replacing this 13th chart, take a













RIGHT HAND				
1- Right Thumb	2. R. Forefinger	3-R. Middle Finger	4. R. Ring Finger	5. R. Little Finger
R 13	R 1	R 8	R 1	R 7
				
7	17 7	11 7	13 4	12 6 14
LEFT HAND			LEFT HAND	
6. L. Thumb	7. L. Forefinger	8. L. Middle Finger	9-L. Ring Finger	10. Left Little Finger
UI 13	U 3	U 3	U	U
				
5	17 10	12 5	11 5	12 7 10
LEFT HAND			RIGHT HAND	
Plain impression of the four fingers TAKEN SIMULTANEOUSLY.			Plain impression of the four fingers TAKEN SIMULTANEOUSLY.	
				

Plate 9



look at the first counts of the other impressions--if one of them will register on the same chart, it will save replacing and repulling to use it while it is out. Then in regular order pull the other charts and place the key number for the rest of this print.

As long as the keying cards are kept intact, the impressions on this print may always be located in a few minutes after once being registered. It will be found best, as well as quickest, to perform the preparatory work as given here--for there is a similarity of patterns on most peoples hands. Notice on Plate No. 11 that the ring and little fingers register on the same chart. The author has found prints where no less than eight fingers registered on two charts, making a total of four charts pulled for registration. Even three charts have taken care of ten digits. The less pulling that is done, the quicker the work. So by making all the counts at one time in readiness for registering each impression, time and labor will be saved.





When a chart is pulled, it is good practice to run the eye over the registered impressions to see if there are any more that will go upon that chart. It is surprising how similarity runs through some of the prints of the same person,

Although personal similarity is very noticable it is not so close, or so close or observable in the impressions that happen to have the same three counts of different individuals. For in the Loop sub-divisions about one in 700 will be found to be repeated. That is, one impression will be found to have identically the same three counts on some one of the 700 Loop

52






RIGHT HAND.

RIGHT HAND.

1.—Right Thumb.	2.—R. Fore Finger.	3.—R. Middle Finger.	4.—R. Ring Finger.	5.—R. Little Finger.
11	R <sub>2</sub> 9	R <sub>1</sub> 9	R 13	11
				

LEFT HAND.

LEFT HAND.

6.—L. Thumb.	7.—L. Fore Finger.	8.—L. Middle Finger.	9.—L. Ring Finger.	10.—L. Little Finger.
U <sub>1</sub> 6	U <sub>1</sub> 9	U <sub>1</sub> 10	U <sub>2</sub> 13	U <sub>1</sub> 6
				

LEFT HAND.

RIGHT HAND.

Plain impressions of the four fingers TAKEN SIMULTANEOUSLY.

Plain impressions of the four fingers TAKEN SIMULTANEOUSLY.



Plate 10.

impressions registered. But the similarity ceases with the counts. The difference is such a marked one, that under any ordinary circumstance, it will never be mistaken for the imprint intended.

Plate No. 11. is presented to show the difference that is made by careless counting. This print was taken out of the file with the counts written upon it as shown. The sub-classification is correct, it could not be otherwise; but if the counts on the left index had been 9 instead of 2, or that of the right middle finger had been 10 instead of 5, and the same miscounting had been done, it would have required considerable searching to locate the print. for instead of the reading

being  $\frac{1 \text{ U } 1 \text{ 1 } 8}{1 \text{ U } 1 \text{ 1}}$  it would have been  $\frac{1 \text{ U } 10 \text{ 9}}{1 \text{ U } 10 \text{ 9}}$

The single finger print classifications are:

Right thumb. R/12/7/9. Ibl. Fa 2&3&4/5&6/10. Ea, 11. Fb, 2&3/6/11&12.

Right index R,1/2/11/14. Fa&b. 2. Fb, 1&2/2.

Right middle R/5/12/16. C, 4&5. Fb, 1&2.

Right ring R,1/9/7/15. Fa 1&2/3&4/5&6. Ea,8. Fb,1/6&7. Eb,3/4/6.

Right little R,1./9/7/15. Fa, 2&3/5&6. Fb 3&4. S9.

Left thumb U/10/11/22. Fa, 1&2/7&9/8&9 Fb, 1/5. 1o5.



Left index	U/3/10/13. Fa, 2&3. Fb, 1&2/2&3/3&OT.
Left middle	U/3/14/16. Fa, 2&3. Ea, 2&3 Fb, 1&2/dF3.
Left ring	U,/1/8/7/15. Fa, 2&3/4&5/8&9. Fa,o, 5&6 Fb, 6&7. C, 8&D.
Left little	U,/1/9/4/17. Fa, 6&7. Ea, 9. Fb, 2/3/5/7&8. I,6.

Compare them. Count them. Analyze them for your own satisfaction and TRY and find one similar in every detail! A Higher Intelligence than ours placed the corrugated markings, named ridges, upon the fingers of man; which, considered under the light of evolution, are commencing to be recognized for a predestined use; viz, identification of the individual.

Plate No. 11. is ready for registering. Commencing with the right thumb, chart R, 12., is pulled and the key number of the impression placed in the 7th vertical and 19th horizontal zones. Each finger is then charted in regular order. Although nine charts will be required to register this finger print record, only four of the 36 segregations will be used. The author has, when making a search, been able to locate the print wanted through the similarity of the patterns of the individual. This print is a good example. Observe the close likeness. Alike yet unlike, because every detail that goes into its similarity differs from every other.

57










RIGHT HAND				
1.—Right Thumb	2.—R. Forefinger	3.—R. Middle Finger	4.—R. Ring Finger	5.—R. Little Finger
-R 10	R 7	R 4	R 8	R 8
				
LEFT HAND				
6.—L. Thumb	7.—L. Forefinger	8.—L. Middle Finger	9.—L. Ring Finger	10.—L. Little Finger
L 10	L 7	L 4	L 8	L 8
				
LEFT HAND		RIGHT HAND		
Plain impression of the four fingers TAKEN SIMULTANEOUSLY		Plain impression of the four fingers TAKEN SIMULTANEOUSLY		
				

Plate 11.

Plate No.12. is a very unique example of a finger print record. It has all nine regular patterns upon it. Necessitating the pulling of ten different charts for registering it.

There is no need to draw the lines upon a print in order to classify it. They are only shown on the illustrations to settle the Termini for the readers observation. The classifying completed, charting is commenced with the right thumb, and each finger registered in regular order. The first count of the A2. on this print is 1. the OT are always the nearest delta to the IT. The upstanding Loop is so prominent that it makes the ideal Termini on what is a complex pattern. The Arch pattern has an elongated island--which is used for charting purposes whenever one can be found. The first bifurcation above the island is the first forking or triple bifurcation, which would have been very convenient for counting purposes--if the island had not appeared. With ordinary care being used, there is absolutely no reason to have a single finger impression in the file that cannot be located in a few minutes if wanted. The Identification Bureau with a file so indexed and registered will quickly forge ahead in results--because of being able to exhibit real efficiency.

The Single Finger Classification as herein described may be used for general purposes, but not for registering a finger print as a permanent record. Only the purchase of a file of the "Crosskey Identification Charts and Key cards" allow the full, complete use of this System for permanent registration of finger prints.



NAME	<i>Richard Roe</i>				CLASS		<i>11 R</i>		MALE
					S. Q. X. Y. Z.		<i>15 - at</i>		
					FOL.				
<i>R<sub>1</sub></i>	<i>6 W</i>	<i>9 W<sub>1/2</sub></i>	<i>12 TL</i>	<i>9 LP</i>	<i>12</i>	<i>19</i>	<i>24</i>	<i>17</i>	<i>13</i>
<i>U<sub>1/2</sub></i>	<i>19 CP</i>	<i>11</i>	<i>Ac.</i>	<i>18</i>	<i>16</i>	<i>21 T</i>	<i>28</i>	<i>17</i>	<i>16</i>
<i>3</i>	<i>1</i>	<i>17</i>	<i>18</i>	<i>18</i>	<i>14</i>	<i>20</i>	<i>19</i>	<i>14</i>	<i>18</i>

Plate 12.

The Single Finger Print Identification System may be obtained from the "Crosskey Single Finger Print System" of San Francisco, California. The System will be available in the best up-to-date compact form, and in several styles that will make the System most adaptable for the business wherein it may be used.

Plate No. 18 illustrates a cabinet to contain the Crosskey Single Finger Print System for registration of finger print records that are classified by the "Henry System." Millions of impressions may be registered in this cabinet which occupies less than one square yard of floor space.

Plate No. 19 is a cabinet to hold the Crosskey Single Finger Print System for Commercial purposes. It will hold and register millions of single finger prints and only occupies about three quarters of a yard of floor space. A small piece of furniture supplying PREVENTION, PROTECTION, and giving scientific results.

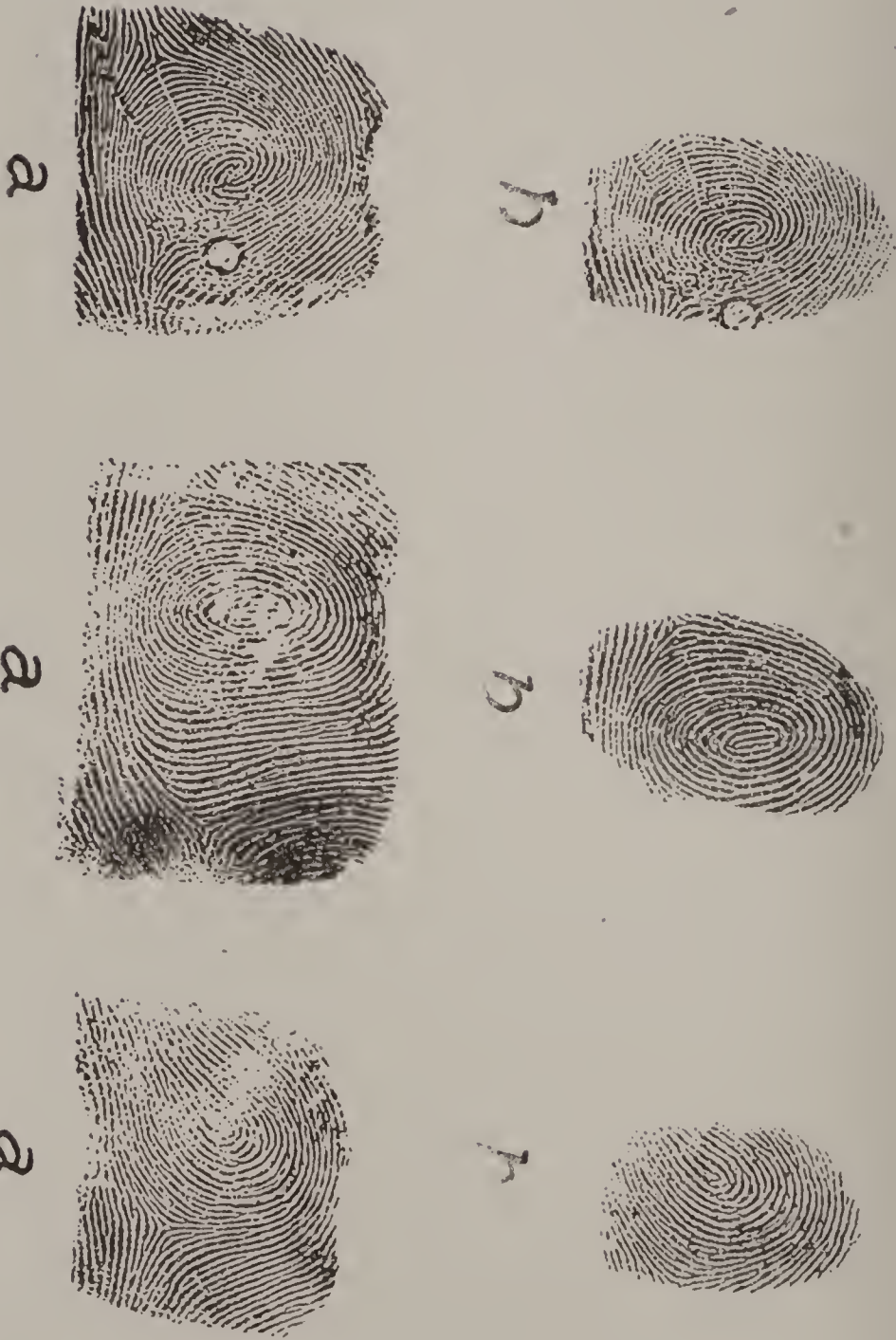


Plate 13.



## LOCATING INDIVIDUAL PRINTS

On page 32 of Mr. Frederick Kuhne's book, "The Finger Print Instructor"; figure No. 41.. shows the photographic reproduction of the rolled and plain impressions of three fingers. They are reproduced in this work with Mr. Kuhn's permission. Plate No. 13.

To convince the skeptic, it will be shown from these well-known prints, that the illustrations herein used, are not picked studies for the purpose of demonstrating the efficiency of the Single Finger Print Identification System. The use of the three plain impressions to find the finger print record to which they belong, is just the same as using a latent that has been obtained at the scene of a crime. They are a convincing witness of the ease with which this system is operated.

The classification of the first Whorl is  $\frac{W,s \quad 10.}{11 \quad 21}$

for transmitting over the telegraph wire, it would be written W,s/10/11/21.

The middle Whorl has a classification of  $\frac{W,e \quad 15,}{5 \quad 20}$ ,  
or as written W,e/15/5/20.

The classification of the Loop is  $\frac{R,1. \quad 15,}{3 \quad 17}$   
as written U,1/15/3/17

The positions of these fingers on the respective Charts on which they would be charted is shown by the letter "R", indicating a rolled impression in the zone in which the classifying counts place the finger print. Plates 14-15-16.

With the rolled impressions now indexed on the Identification Charts, we will now classify the plain impressions in the same order.

The first Whorl would be W, 2 if it were not scarred. Which should not be overlooked in case the scar was the result of an injury since the impression was charted, for if not found in the W, s division, the W, 2 should be looked at.

So  $\frac{W,s}{W,2}$  is written in the upper left hand corner.

Locating the inner terminus, a count of the ridges is made to the outer termini, which is at the right of the delta on this Whorl; 9 is the result. On account of the impressions scarred condition, we are not certain that 9 is the correct count, So 9 plus is written in the upper right hand corner.

Then following the line that has the appearance of being the delta line, to a point vertically under the inner termini, a count of 10 is made and placed in the lower left hand corner. Then counting from the vertical starting point to the inner termini, a third count of 12 is obtained, which added to the second count of 10 makes a total of 22 to be written in the lower right hand corner.

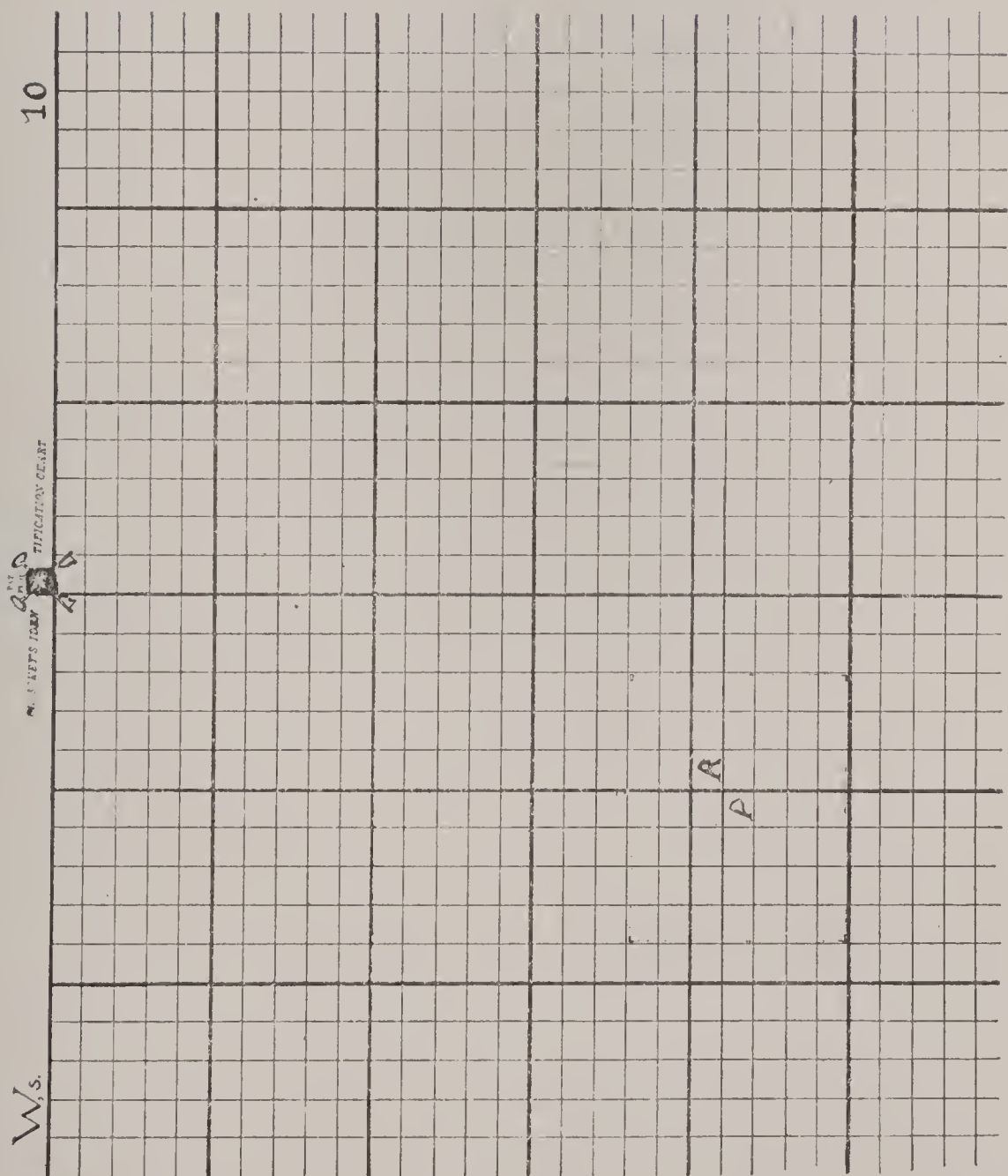


Plate 14.



Plate No. 14 shows a Crosskey Identification Chart, with the rolled impression charted in the correct zone, marked "R". The classification of the plain impression took the search to W,s. No. 9. As this print was not to be found on that chart, and the plus mark showed that the count of 9 was not authentic, we have pulled the 10th Chart, Plate No. 14 which shows the zone (P) the classification of the plain impression would direct to.

So that any possibility of error having been made, a good search would cover the area marked 3 above, 3 below, and 3 on each side of the zone a classification leads to. This practice will overcome any chance of error in making the counts when charting for registration any finger print. This does not mean that each finger print record will have to be pulled from the file so that a comparison can be made.

A key number is placed in the zone which represents the finger print. The key cards have the classification of each finger written upon it, so by just looking at the classifications of any key number, it is quickly ascertained if it is necessary to pull the print.

By making a search in the area indicated on Plate No. 14. forty one chances to one are provided against a mistake being made. The operator will soon find out for himself the best way to look for any single finger print. for the many variations that can occur make the subject too exhaustive for continued examination in a book. As long as the counting is done as correctly as possible, with due notice taken of

which way more ridges could be added to the counts, the principle for locating prints remains stationary.

Looking at the middle impression, it is found to be an extra large Whorl. On regarding it with more attention, we see that it is a Whorl with an elliptical appearance, so W,e is written in the upper left hand corner. Being plainly evident that the left delta is the nearest delta, a count is started from the inner terminus to the outer terminus, which is a dot at the left delta. 15 ridges are found to intervene between the termini's. Then tracing the left delta line--which runs into the 15th ridge, it is followed to its end and on to the ridge below until a point vertically under the inner terminus is reached, and the ridges down to the flexure are counted; the result is 5. Going back to the starting point of the vertical count, we commence counting the ridges toward the inner terminus, finding 16, they are added to the 5 previously had, making a total of 21, which is placed in the lower right hand corner.

Classifying the plain impression of this Whorl, we obtain

W,e.	15.
5	21.

It will be observed that the third ridge on the rolled impression, counting from the bottom at the left side, does not run so far under the center of the pattern as it does in the plain impression, hence, we have one more count on the plain impression than there is on the rolled print.

Pulling Chart W,e. No. 15. from the file and looking in zone 5/21 — where the "P" is marked, we do not see anything so the next zone is tried, and all

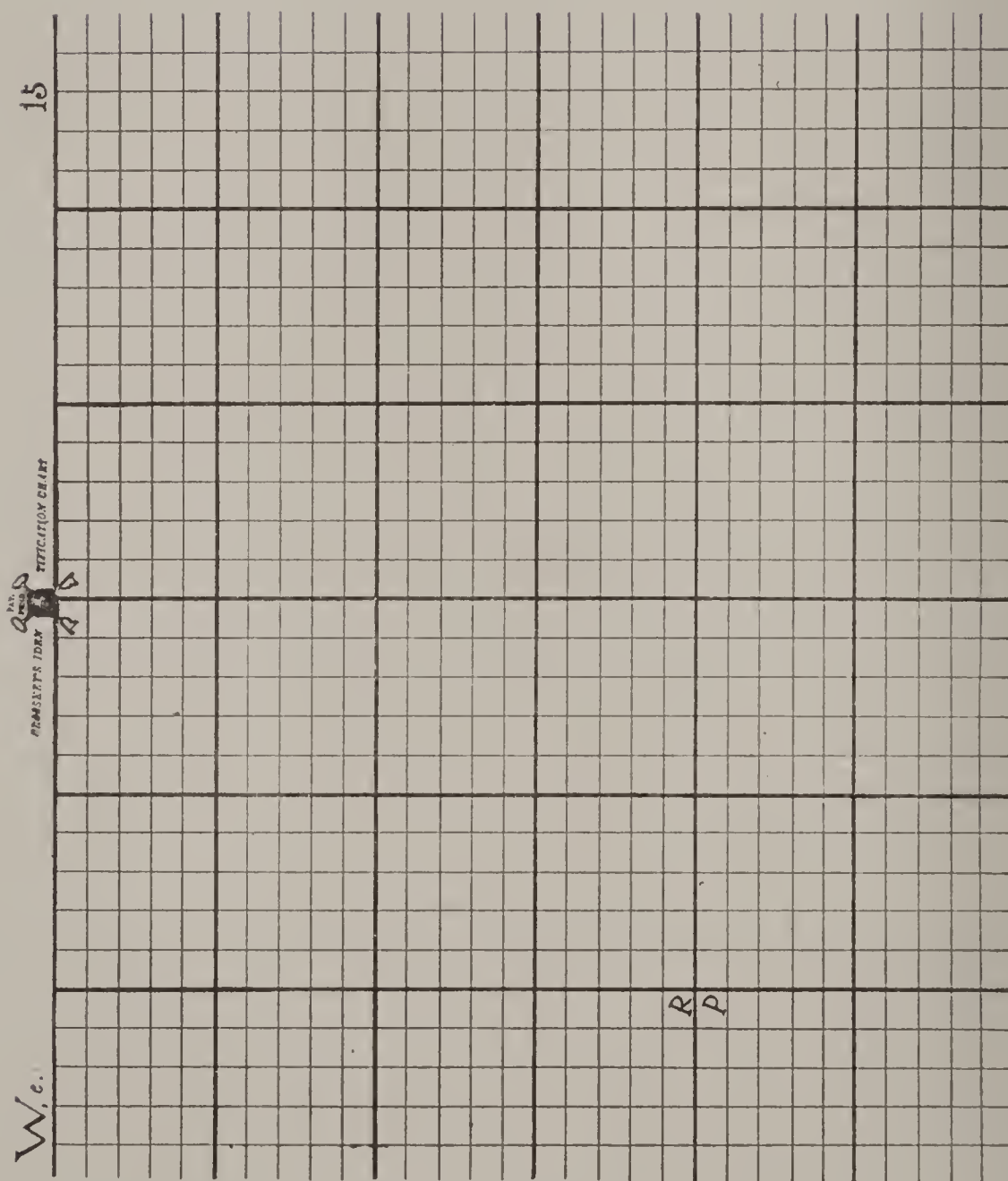


Plate 15.



four surrounding zones, to find the key number in the zone immediately above the area that the classification of the plain impression registered.

The classification of the rolled Loop is  $\frac{U,1. \quad 15,}{3 \quad 17}$  written. U,1/15/3/17.  
Its position is marked on the Chart, by the letter "R".

Classifying the plain Loop, we are not going to be certain that any numbers taken from it are going to be correct, as there is but one established starting point to work from--the inner terminus. By counting all that can be seen on the plain impression, we secure a classification of  $\frac{U,1 \quad 15}{1 + \quad 14 +}$  to commence a search with.

Pulling Chart U, 1. No. 15. and looking at 1/14 the print is not located, so we commence working downward and to the right--the plus behind the numbers showing we are not certain, but that more ridges are on this finger, so as we eliminate each zone in turn, we finally get over to the 5th and 17th zones--counting the rolled impressions we can see that the difference was caused by the plain impression being marked to the flexure.

This search for the U,1. Loop may have caused 15 to 20 prints having to be pulled. But when you stop to consider the number of loops in the ordinary file, and that there is no scientific way in which to locate any single loop in that file; it is apparent that the activities of a search are wonderfully narrowed down to the lowest expected basis by the use of the Single Finger Print Identification System.

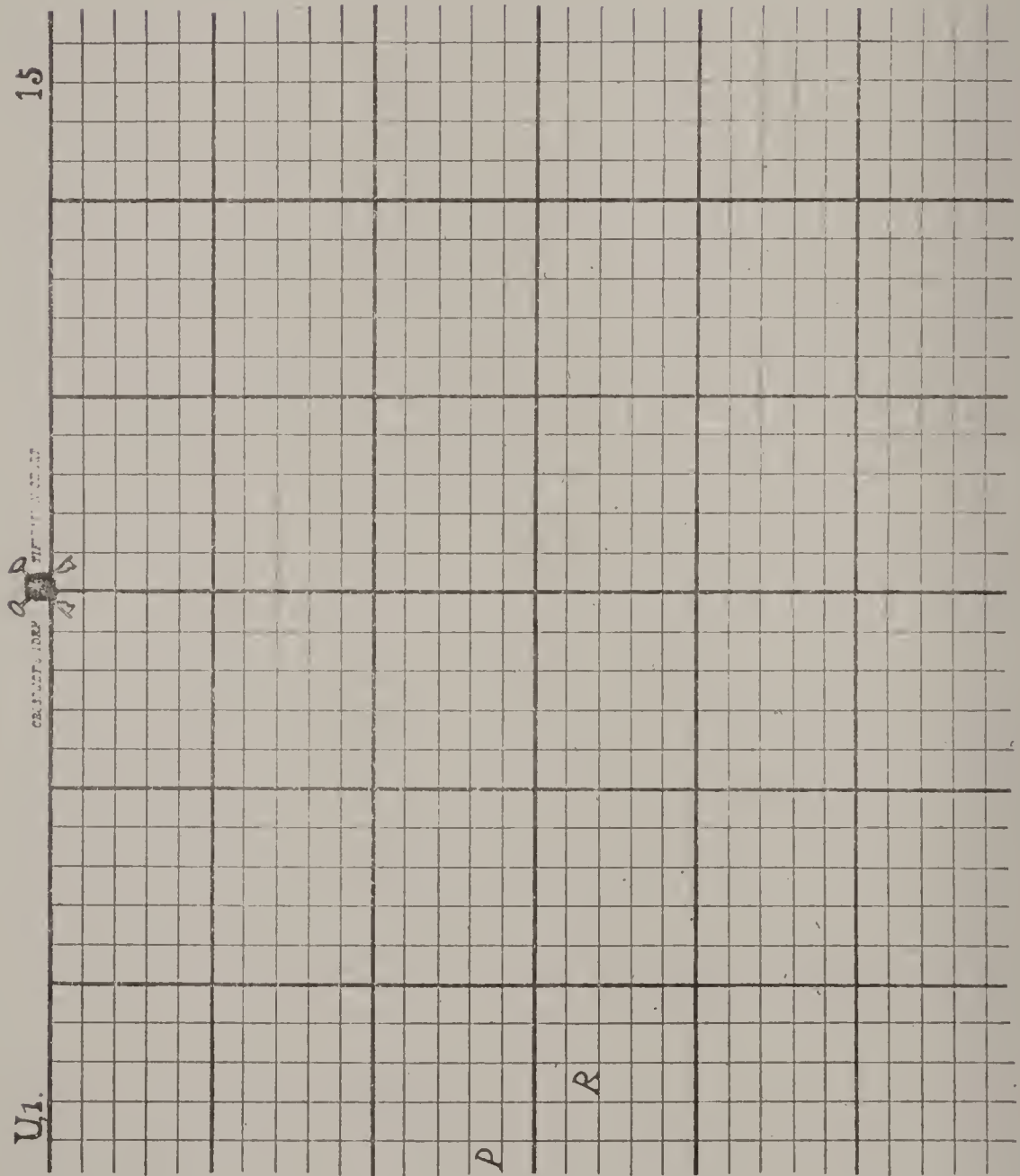


Plate 16.

CROSSKEYS IDENTIFICATION CHART.



Key Number	Name	Classification	Single Finger Class.													
(Plate #1)	Richard Doe		R <sub>1</sub>	6	W <sub>2</sub>	11	W <sub>2</sub>	9	W <sub>1</sub>	16	R <sub>1</sub>	17+				
1		27 I O O 17+	19	24	13	26	9	24	8	24	7	20				
		12 I I I 16	U	10	LP	12	TL	9	W <sub>1</sub>	16	U <sub>A</sub>	16				
			12	20	13	26	18	28	9	24	2	13				
2																
(Plate 12)	Richard Roe		R <sub>1</sub>	6	U	9	W <sub>2</sub>	12	TL	9	LP	12				
3		11 R	19	24	14	22	14	24	17	28	13	26				
		15 - at	U <sub>2</sub>	19	CP	11	Ac	1	Ac	21	T	16				
			3	17	18	23	16	18	14	20	19	18				
4																
5																
6																
7																
8																
9																
10																

Plate 17.





Plate 18.

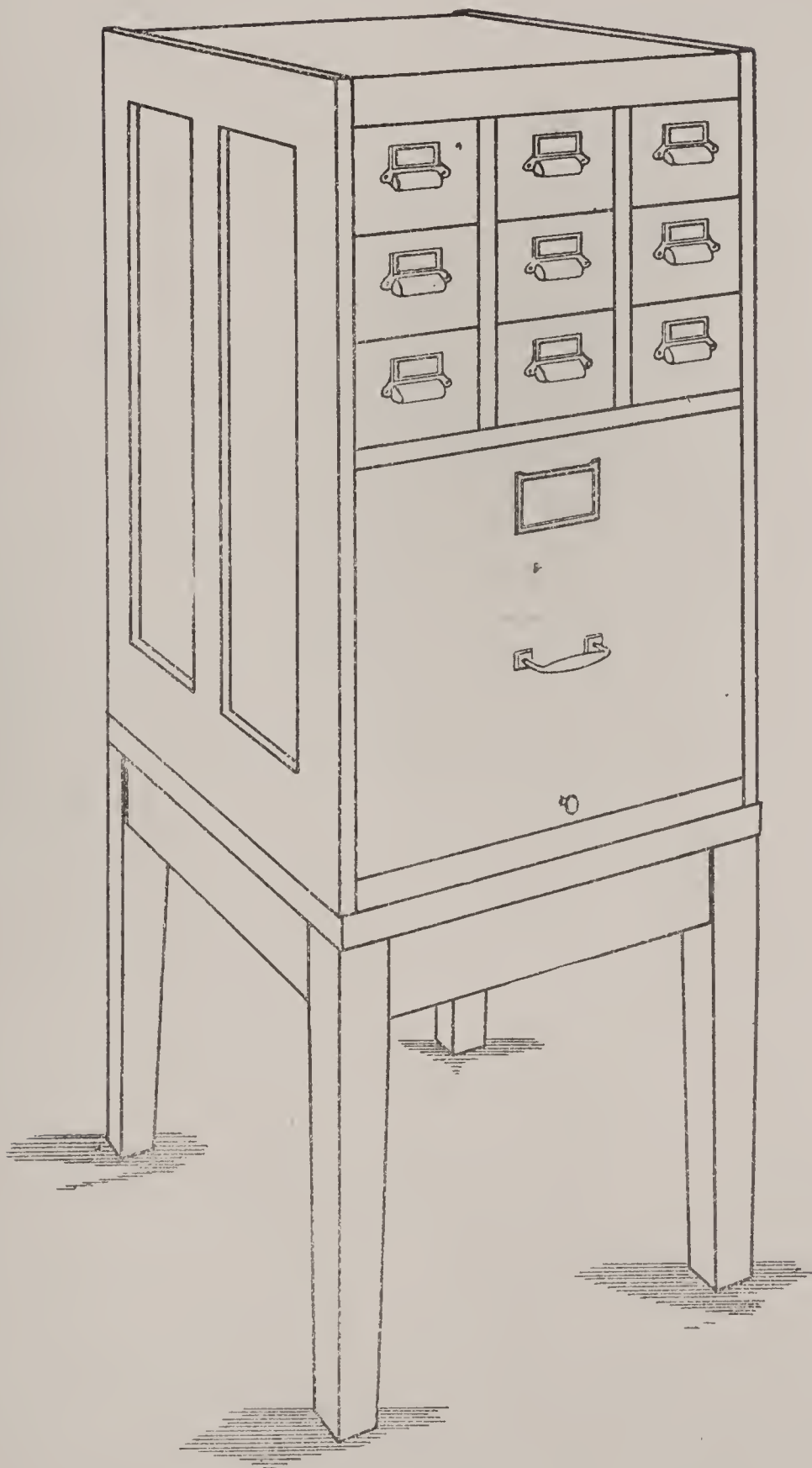


Plate 19.

## LATENTS

Securing Latents has become a regular part of an Identification Bureau's day's work. It is productive work. In many instances the results are wonderful and surprising. The worst feature is that as a general rule, there are not enough latents picked up at the scene of a crime, to supply a ready guide to the finger print record wanted for comparison; consequently, a great deal of time is wasted in fruitless search of the file for the original of the latents. The Single Finger Print Identification System will eliminate all this wasted effort and save time. Directly a latent is picked up, it may be classified, and by looking in the area of the zone it would be registered in an identification would be made in quick order. Fifteen minutes work with this system will save days, even weeks of useless file searching.

“When Augustus Estrada, alleged master burglar, forced an entrance to the home of Mrs Mary Johnson of this city, the night of November 26th, 1918. and escaped with loot valued at several thousand dollars, he reckoned without the science of finger printing.

Just before he left the residence he picked up a glass on the kitchen sink and took a drink, and as a result of that act he is serving sentence in San Quentin today. Little did he realize then, that his thirst was to cost him his liberty for 10 years.





Plate 20.

Estrada was arrested and convicted through the one lone finger print which he left upon the glass. It was the sole piece of evidence against him, but it was sufficient to convince a jury of his guilt. So thoroughly did Fred B. Kutz, Superintendant of the local identification bureau, enlighten the jury on the science of finger prints, that they returned a verdict of "guilty" in less than 20 minutes.

The case was reported and investigated in the regular routine manner. Detectives visited the Johnson residence and secured a list of the loot. But were unable to find any clues by which the burglar might be identified. The only hope of the detective was to apprehend the thief when he tried to dispose of the loot.

Then Superintendent Kutz was called to investigate the case. Somewhere within the four walls of the Johnstone home, he knew that he would find something the burglar had touched. He found dozens of finger prints on various articles in the house, but minute examination proved they had been left by members of the household. He was about to leave, when suddenly he spied the glass in the sink.

Closely questioning members of the family, Kutz learned that they had not touched the glass since the house was burglarized. It was evident that the fresh print which Kutz found upon the side of the glass had been left by the burglar. The print found by Kutz was hardly discernable to the untrained eye, but by a simple process known to all finger print experts, he soon made it clearly visible. Plate No. 21 shows the latent Mr. Kutz lifted, and Plate No. 20 is the rolled impression of the same finger.



Plate 21.



The ridges of the fingers are studded with small pores that exude a continuous flow of oily perspiration. This flow leaves the surface of the fingers constantly moist, and as a result when the finger is touched to any smooth surface, a mark results that is an exact impression of the ridges. These impressions are sometimes blurred and hard to see, but in most cases they can be brought out sufficiently for comparative purposes.

Such impressions left on light colored surfaces are brought out by sprinkling black powder over them with a small brush. The powder falls off the smooth surface and sticks only to the oily impression left by the ridges of the fingers. In a similar manner, impressions left on dark colored surfaces are developed with chemist's gray powder. After the impressions are brought out on the hard surfaces, they are usually photographed and the photos enlarged. This phase of the science is known as the "developing of latent prints".

And so it was by this method that Superintendent Kutz developed and photographed the latent print on the glass from which Estrada had taken a drink.

Three days after Kutz visited the Johnson home four suspects were arrested in connection with the crime. They were all closely questioned but all proved alibis. Estrada, one of the suspects chuckled softly to himself. The loot was hidden where it would never be found, and he was certain the police could prove nothing against him, but again he reckoned without the science of finger prints. When Estrada entered the Bertillion room and was finger printed

Superintendent Kutz noticed at a glance that the pattern of his right fore finger was identical with the impression found on the glass in the Johnson home.

Not until he was on the way to San Quentin would Estrada admit his guilt.

Estrada was the first criminal in Los Angeles County to be convicted directly upon finger print evidence. The case was the second in the state in which finger prints figured in a criminal conviction. Just ten days before Estrada's trial, two safe crackers were sent to prison in San Diego on similar evidence.

Finger Print evidence, properly prepared, is the strongest kind of evidence, in the opinion of experts. According to figures compiled by the Government Bureau of Identification, there is only one chance in 28,147,504,070,656 of any two persons having identical prints. \* Plate No. 20. is the inked impression of Estrada's right forefinger.

The following four illustrations were picked up by Sup't Kutz. The well known pattern that is printed on the back of a certain make of fly-paper is readily recognized. This burglar made a practice of pasting fly-paper over the surface of a window, then breaking the glass, he was able to unlock the window catch and make an entrance. If his prints had been registered on a Crosskey Identification Chart, an identity could have been established after the first crime, and a series of burglaries averted.

\* Sunday Morning Telegram, Long Beach, California  
January 15th 1922.

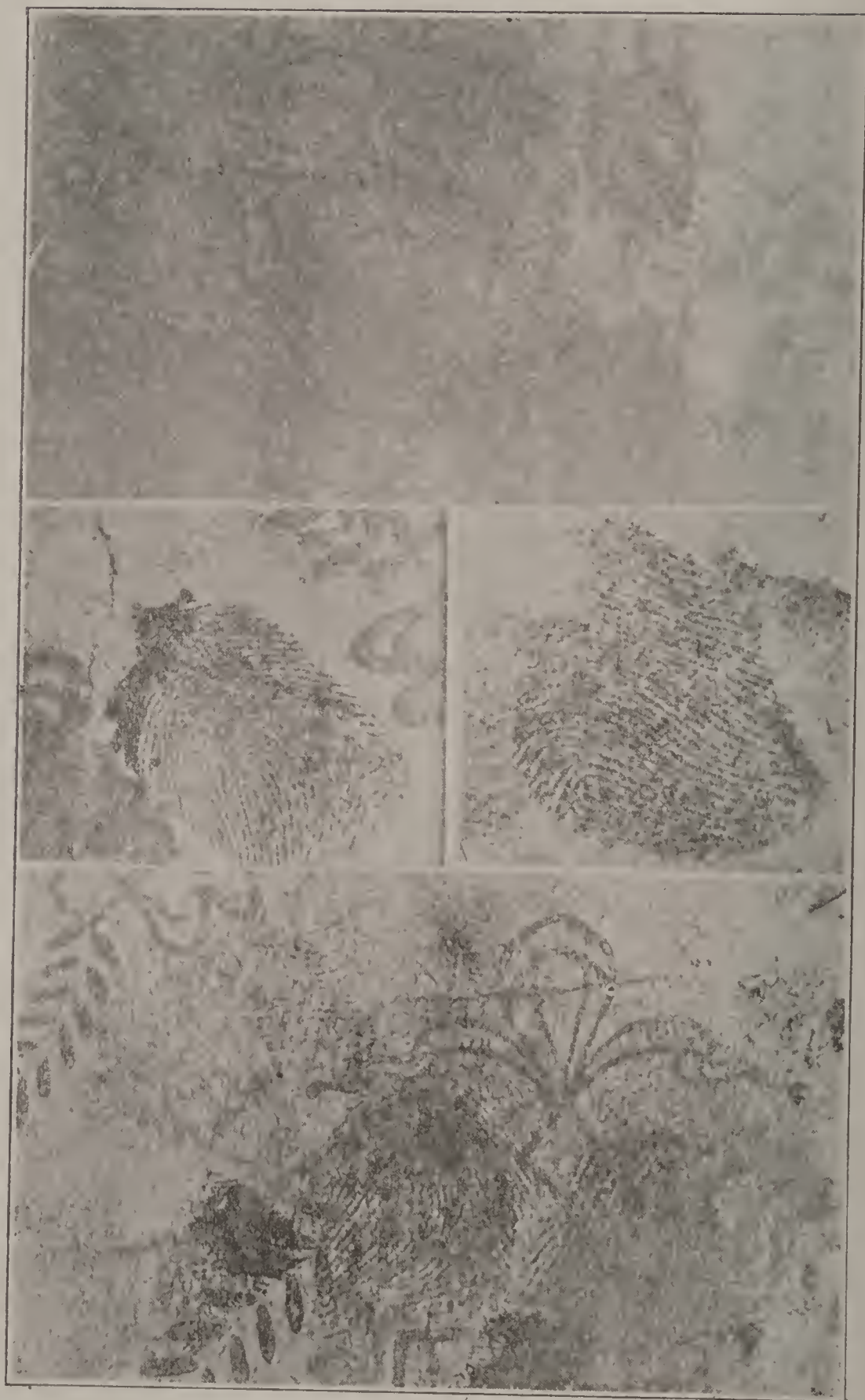


Plate 22.



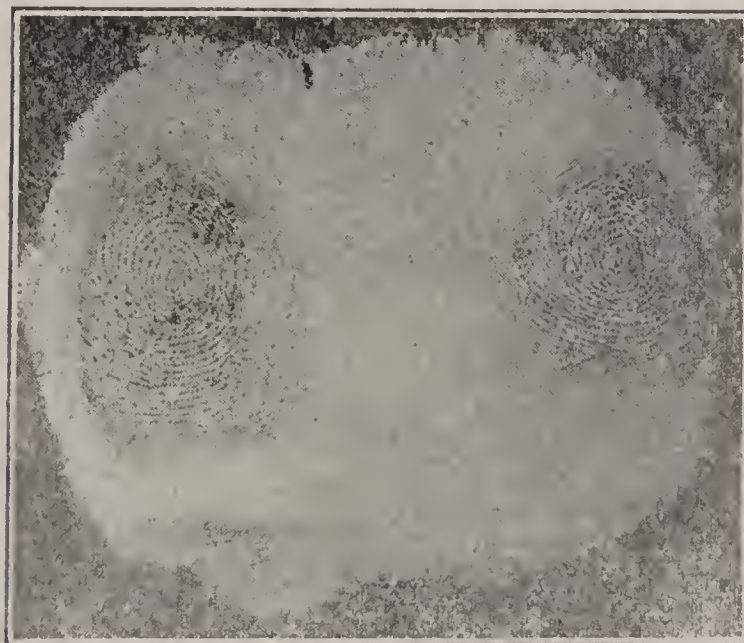


Figure No. 135.

Figure No. 135. is a splendid example of latent development on a dark surface. Although not perfect, because of the absence of the deltas; it would have been quickly 'made' if the owners prints were on file and registered in this system.

It is stated elsewhere in this book that deltas are not absolutely necessary on the guide to be able to find the right finger print record. We will now analyze the left latent of this illustration, and show how the search is confined so as to give the possible results in the quickest time.

The author does not know what the latents were found upon, or their position. This information is a factor in determining whether they are right or left hand latents. From the small portion of the



Figure No. 136.



upper part of the ridges that is visible, an indication is obtained that the latents are right hand middle and ring fingers.

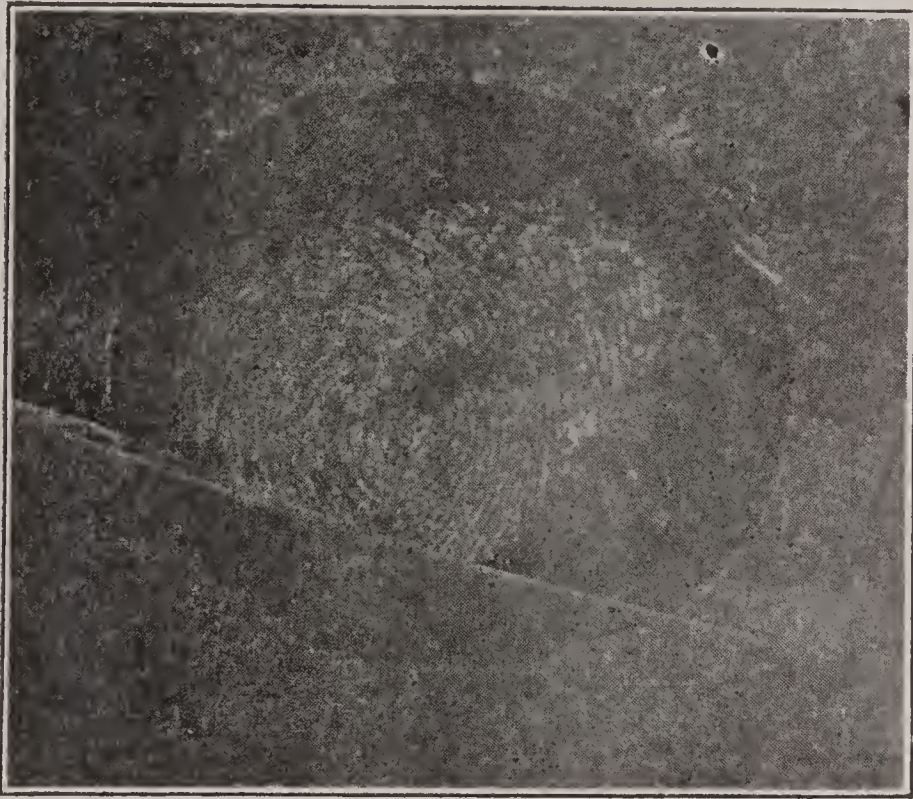


Figure No. 137.

The pattern and type of pattern is clearly established. It is a single spiral Whorl that falls into the W, 1., segregation. The third count is available. It is 24, with a possibility of being 25 or 26.

The nearest delta is evidentially upon the right of the pattern. The contour of the ridges give this indication. It may be estimated that 13 ridges is about the first count. With a piece of scratch paper to figure on the second count is worked out--giving one of 13. So we have a classification reading W, 1/13/13/24 to work from.





Figure No. 138.

When looking at the No. 13. chart, a look is taken at the 13th and 14th horizontal zones to see what is recorded in that zone. If a numbering card is pulled, the regular card is pulled and the finger print record is pulled and a comparison made.

When the print wanted, a search is made at the 13th and 16th vertical column, from the 1st to the 2nd horizontal zones. Placing 30 zones on the 13th Chart, go to the 12 h. 14th and 15th Charts. This will quickly show how to eliminate what are not possible producers, and will give you an assistance with the easiest method of finding a search.

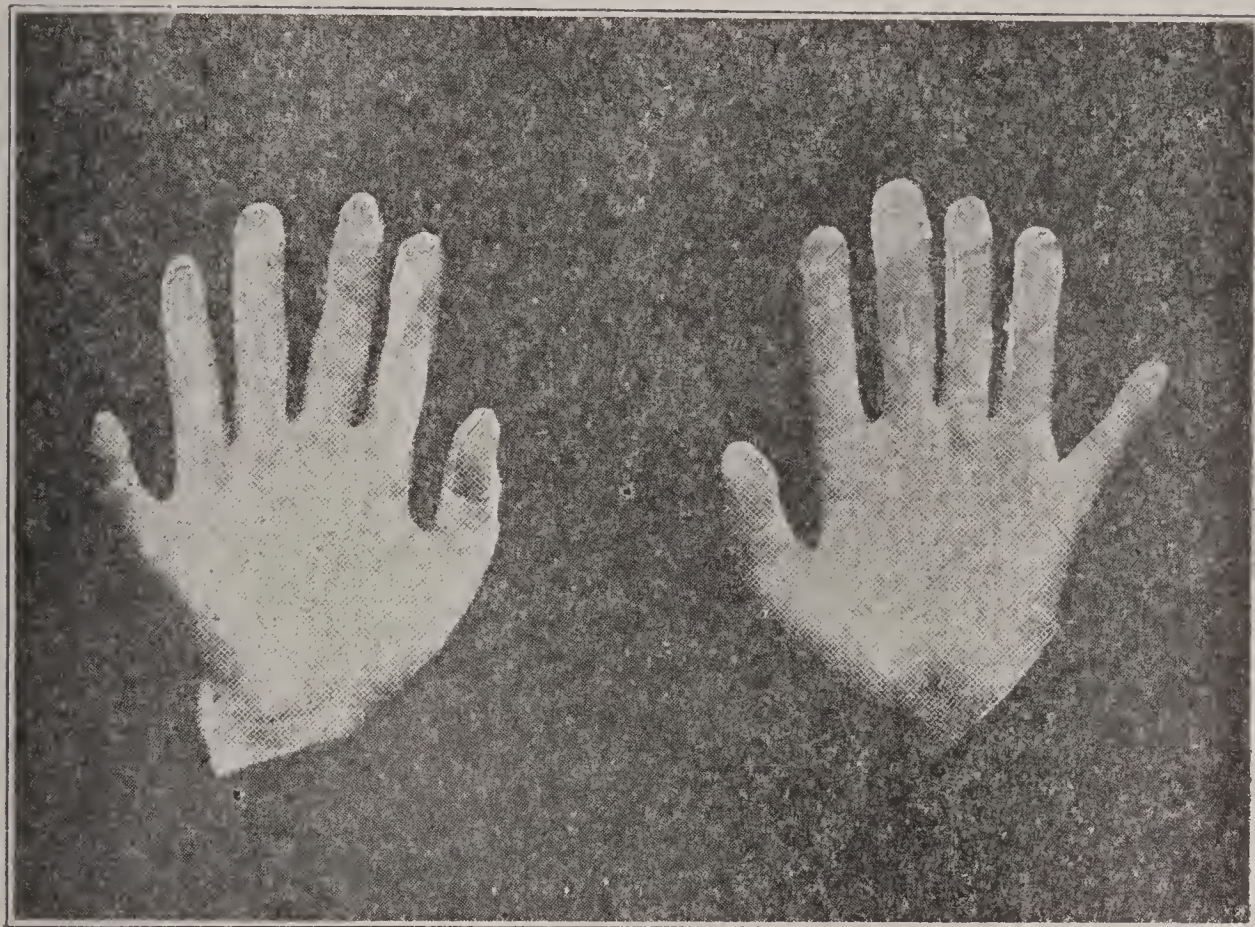


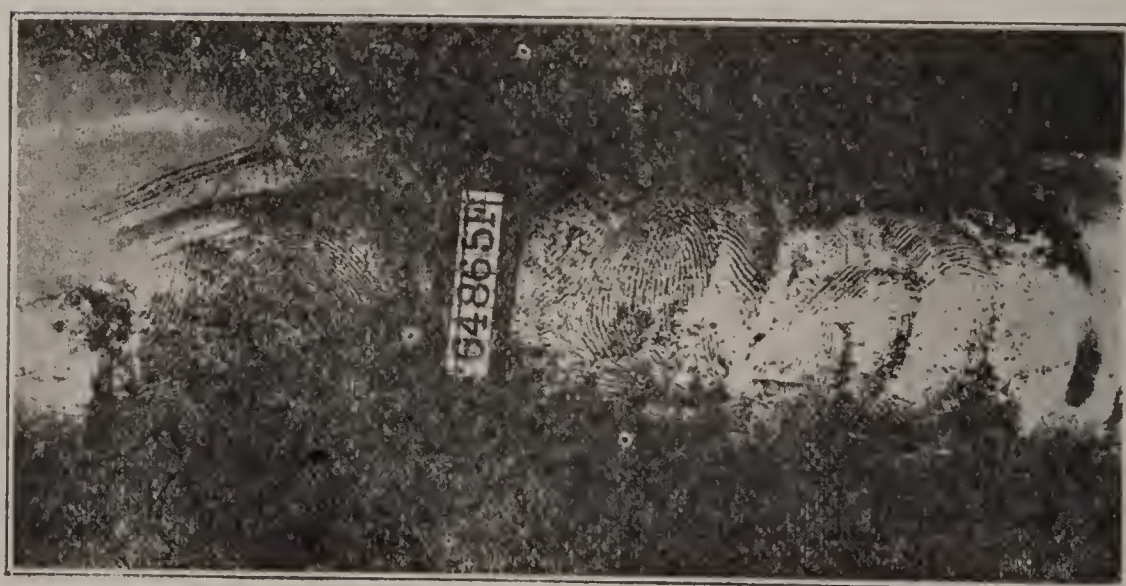
Figure No. 139.

Because this shows an area of 30 zones to examine it does not necessarily imply that 30 individual finger print records will have to be taken from the file. Owing to the similarity of the patterns on the individual the search will be confined to a few prints so it will be found in examining 30 zones, that there are so many fingers on the same finger print record, that the number of prints to scrutinize for comparative purposes is negligible when compared with the fact, that no idea was to be had of which one of the many sections of the file could supply the finger print record wanted.

Figure No. 139 is the photograph of a man's hands well supplied with digits.



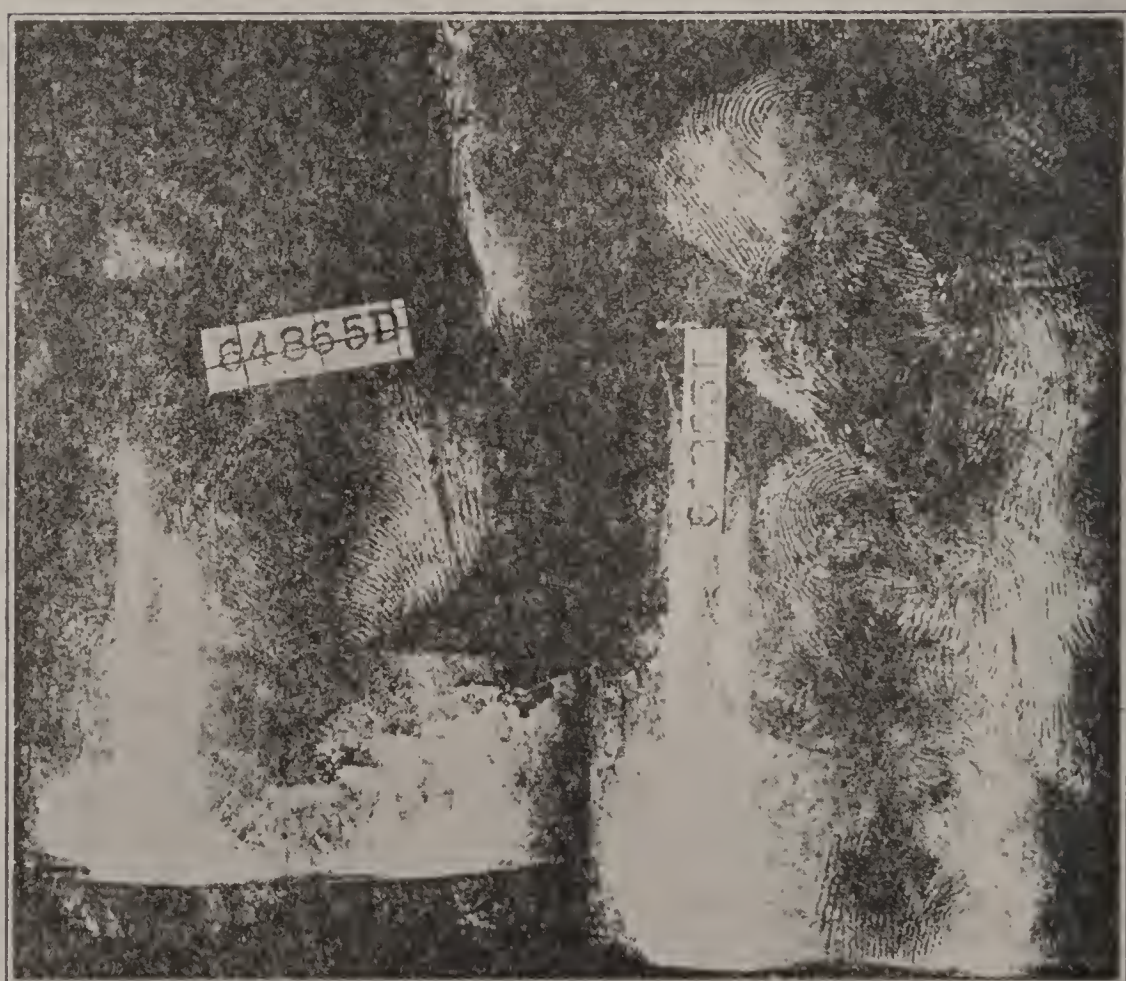
The following seven illustrations of latents were donated by Chief of Police August Vollmer, of Berkeley California. A working classification may readily be made from these latents so if they had been registered in this system it would have been a simple matter to find the owners—providing of course, the owner's had been finger printed.













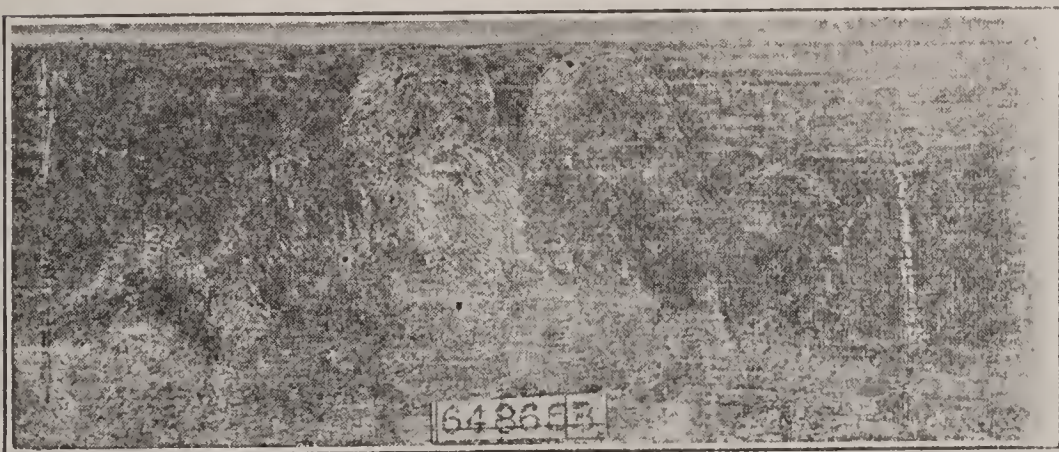
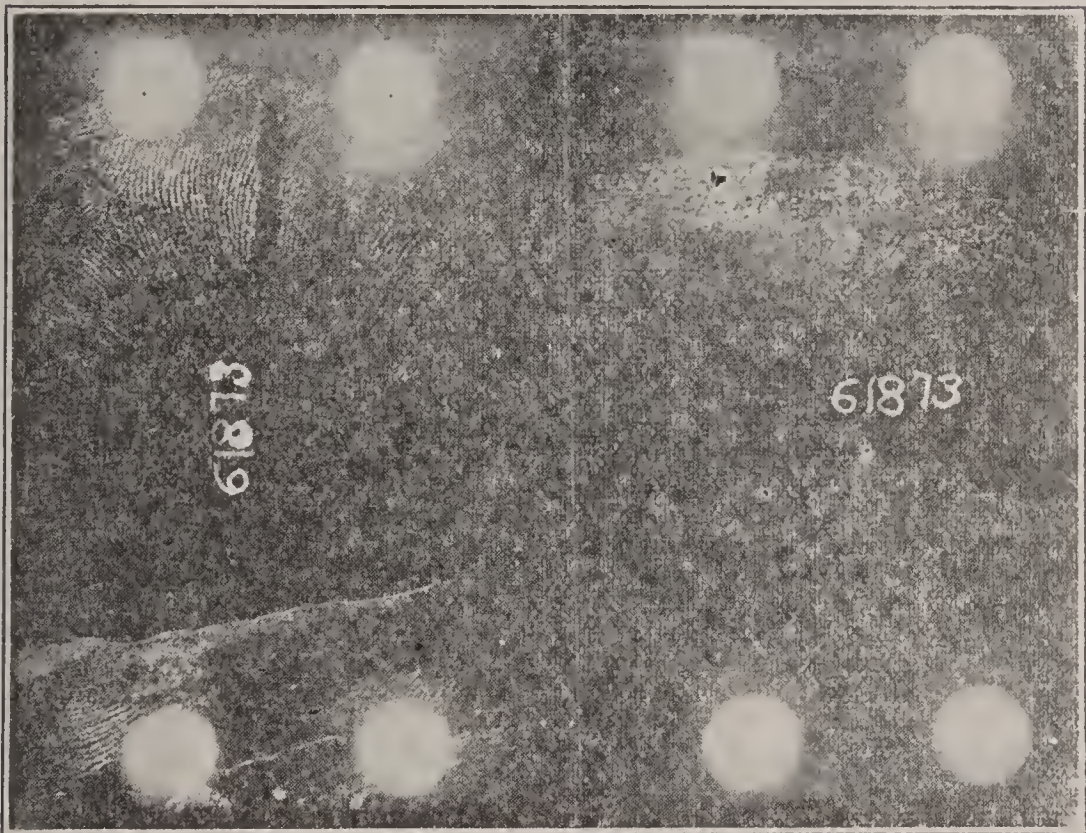
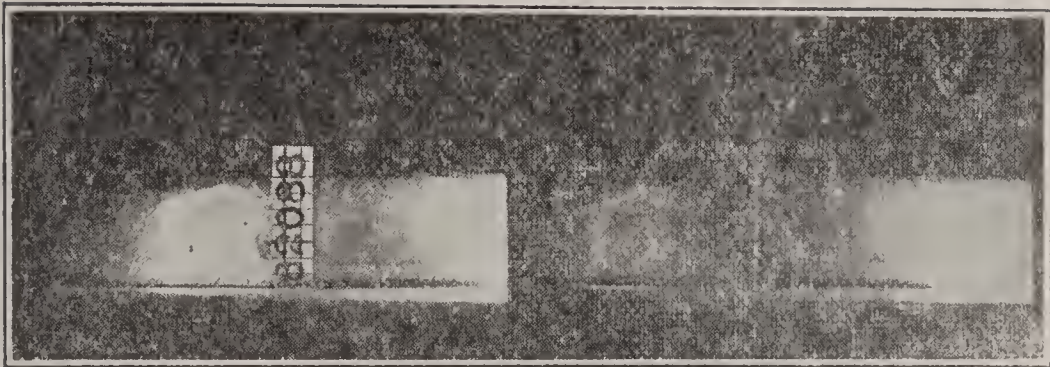


Plate 24.



Photographing latents has created a demand for a practical and efficient camera for producing accurate photographic records of finger prints, which would require no expert knowledge of photography for its successful operation.

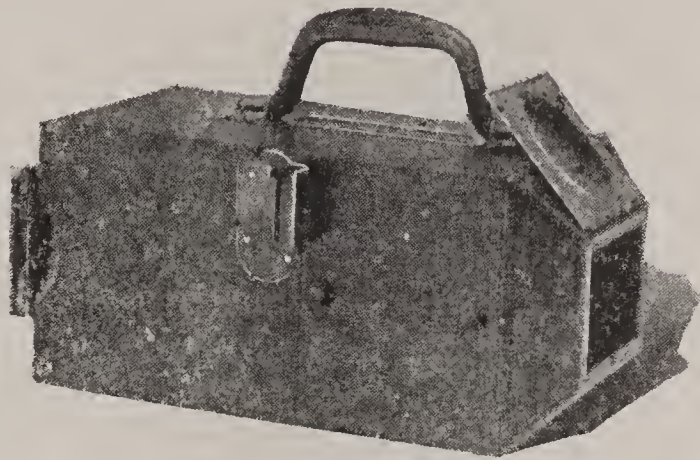
This has been provided in the new F & S Finger Print Camera. Its small size (11 3/4 X 6 X 6 in.) makes it exceptionally convenient for general use, and especially when used in locations inaccessible to apparatus previously employed, which apparatus required the use of a tripod, as well as means, very often difficult to procure, for artificially illuminating the subject.

This camera affords not only a thoroughly efficient means for securing photographically accurate records of finger prints, but is readily adapted to uses other than criminal investigation where accurate photographic records are desired.

The camera is equipped with four miniature lamps operated by batteries contained in the camera. These lamps are located inside the camera, back of the front aperture, easily accessible for renewal, and are automatically turned on, brilliantly illuminating the finger print or other subject with the act of making the exposure. The lamps may be used in locating, or properly placing the camera over the finger prints without interfering with the shutter mechanism, by pressing a small button provided for that purpose.

The lens consist of an f.6.3 Kodak Anastigmat which is unalterably fixed in the camera at a point that renders a full sized image of the finger print with

extreme definition. The shutter mechanism is extremely simple, and exposures of various duration can readily be made.



When the finger print is located and ready for the record to be made the metal front door of the camera is opened. The rectangular front aperture of the camera which is the dimensions of the plate capacity of the instrument, is placed directly over, and held firmly against the surface upon which the finger print is located, the shutter release lever is pressed downward, automatically lighting the lamps, and making the exposure.

An instruction book accompanies the camera giving full information relative to its operation. A Finger Print developing Tank is supplied whereby it is made easily possible for even the uninitiated to produce excellent negatives.

To prepare latents for authentic evidence in a Court, it will necessary to make enlargements. The old hit or miss method of guessing to make an enlargement is now done away with by using the Kodak

Auto-Focus Enlarger, which changes enlarging into a printing process almost as simple and as rapid as contact printing.



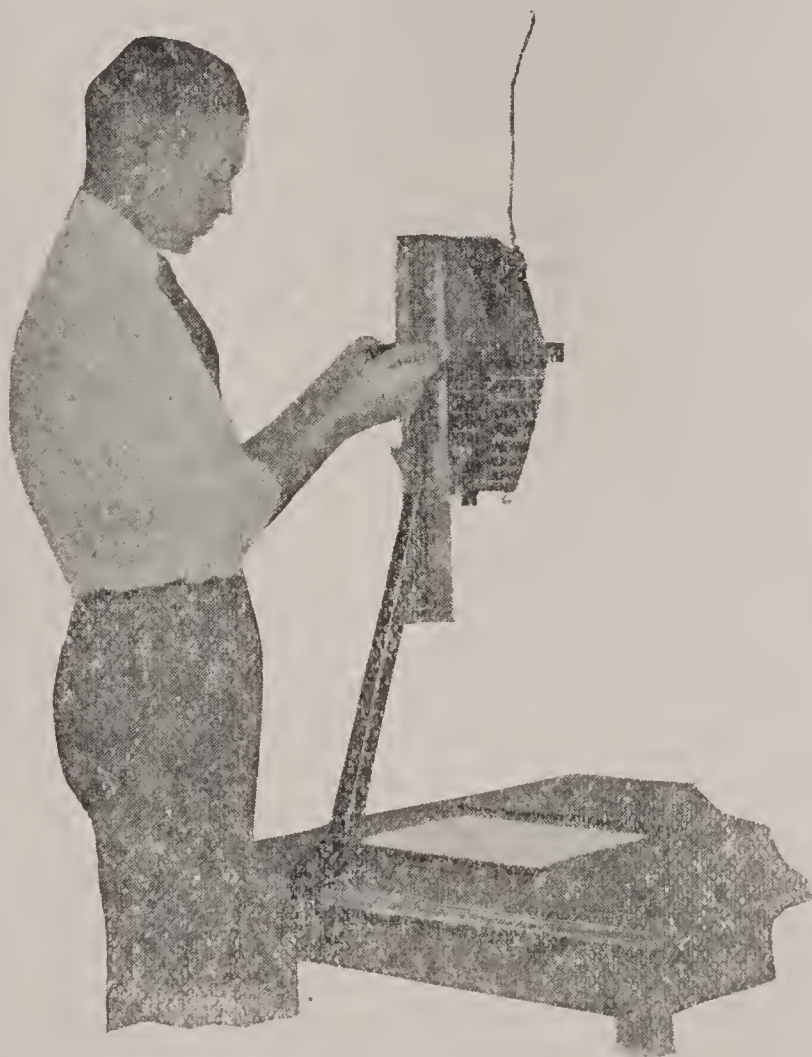
This facility - a decided innovation in strictly amateur apparatus—is accomplished by constructing the Kodak Auto-Focus Enlarger to stand vertically clamping to any table top, and by incorporating the Auto-Focusing principle in the instrument itself. Its position obviates fastening the paper to a vertical surface - its auto-focusing mechanism eliminates the necessity of focusing.

The manipulation of the apparatus is extremely simple. Mask the negative in its holder, slip the holder into the camera, snap the electric switch and the masked image appears before you, projected on the horizontal table top. On this the paper can be laid and secured by the paper holder for printing.

The only adjustment is for the print size—slide the camera up or down on its standard and the image grows larger or smaller as desired. The mechanically accurate, automatic focusing device, which slides on a



vertical cam, constantly changes the focus of the lens with the result that the image is always hair-sharp regardless of its size. When you turn the thumb screw, clamping the camera at the place on the standard where it yields the size image you want, the focus is exact, ready for the print to be made. The lens shield or cap, operated by turning a little lever, transmits an orange light which is bright enough to work by, but which will not fog the photographic paper.



The full significance of what the Kodak Auto-Focus Enlarger does can be grasped in an instant by comparing this process with ordinary methods of enlarging cameras where it is necessary to move the camera back and forth to secure the size print desired.

Then it is necessary to rack the lens to make the print sharp at that size—at best an inconvenient unsatisfactory process. With the Kodak Auto-Focus Enlarger, when you obtain the size image wanted it is automatically in the exact focus wanted each time. It will take the smallest negatives and enlarge them up to the large sized print of 14 X 21 inches. Full instructions for using are supplied with every instrument.

Before closing the subject of latents, the author would like to call attention to one phase of the responsibility that picking up latents entails upon the finger print expert. Society also has a duty to perform towards a person who has paid his debt, by suffering imprisonment, for the misdeeds committed against society. Although there are laws in most states providing that no one has a right to cast reflection upon a person who has paid his debt to society by suffering imprisonment and who has been pardoned, discharged or paroled, this law is not always upheld, for when a crime is committed in any locality, any ex-prisoner or paroled person is immediately placed under or picked up on suspicion. In many cases, effort is made to force the suspicion to fit the crime, therefore, society owes protection to the so-called criminal, who in most cases is sincerely trying to lead a useful life.

Only by the finger print expert functioning to the limit of his scientific ability can society extend the necessary protection to such persons and thus assist in completing the reformation of the erstwhile wrongdoer. For if the identification expert be capable of developing one single finger impression of any individual finger imprint found at the scene of crime, he will be able, with the aid of the single finger print identification charts to quickly eliminate or positively identify any ex-prisoner or paroled person who might be suspected or accused of the crime.

## DEFINITION OF COMPLEX PATTERNS

by

Sir E. R. Henry.

The following illustrations are photographic copies of questionable types of finger prints that were submitted to Sir Henry for definition by Mr. C. S. Morrill, Superintendent of the California State Bureau of Criminal Identification and Investigation, Sacramento, Cal.

Now that the International Association for Identification has established a committee to decide upon complex, or intricate patterns, the author hopes that the finger print profession in general will help this committee in its work by submitting questionable patterns to them for decision. By so doing, if arrangements are made to give out the results of the committee's work so that everyone may share in it, the science of finger printing will be benefited and the diligent, industrious classifier who takes his work with proper seriousness, will be aided to give the results that are expected from him by his employers, the Public.

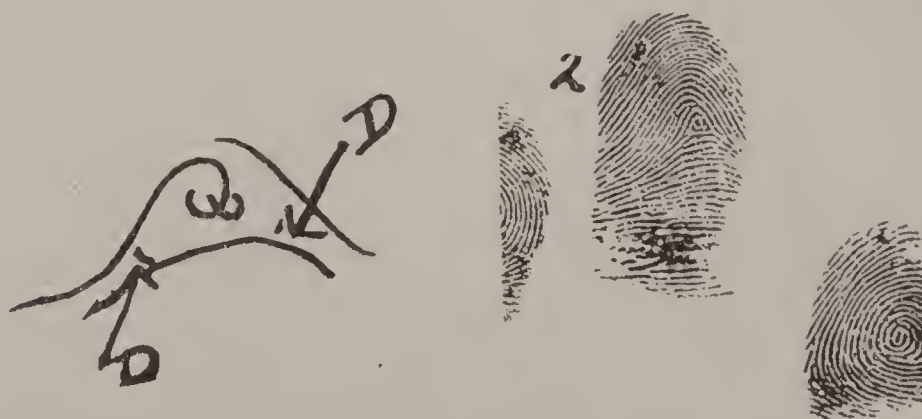


Finger print experts need have no hesitation in submitting patterns to the above committee, for it is composed of practical finger print experts who have spent years in the profession during which they have helped the science of finger printing to become known as the only scientific means of identification.

Sir E. R. Henry's definitions are accompanied by drawings and shown alongside the pattern:

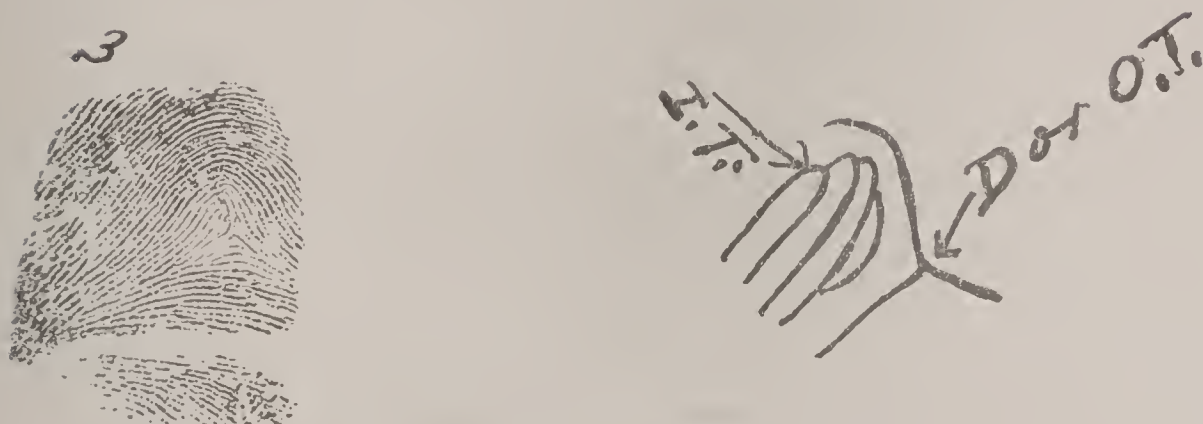


The core and delta can be fixed. Loop with three counts.



Two deltas with a recurving ridge forming the core should be classified as a 'Whorl'.

(Author's note. Notice the similarity of this pattern with Fig. 105 and 6.)

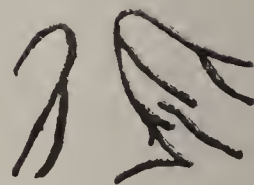


There should be no doubt as to the type in this case. There may be some doubt as to position of the Inner Terminus. Loop with four counts.



4

The ridges at the left side of the summit of Core are disturbed. This is due to scarification. The Core and Delta can be fixed with a fair degree of certainty. Should be classified Loop with four counts. When searching records in this case it would be expedient to make three searches---U Loop, R Loop and Tented Arch.



5

This type is a recurving ridge or staple on either side of axis, classified as Tented Arch.



6

Same as preceding impression.

7

No count. Should be classified as Arch.



(7)

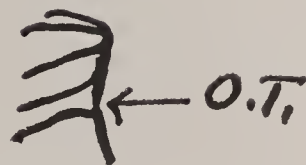






8

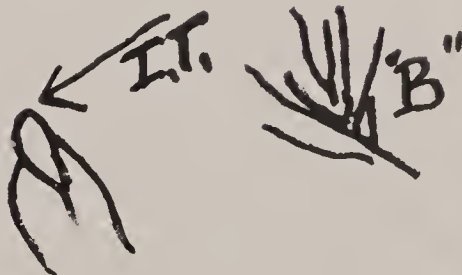
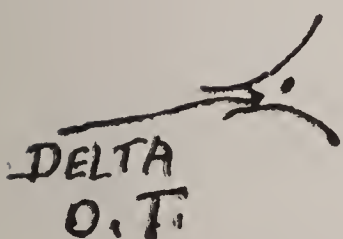
Arch. No count.



9

Loop with two counts.

(10)



10

This has somewhat the appearance of being of the Twinned Loop type. There being no recurving

ridge at (B) its type is that of Loop. When searching records, search should be made under 'Twinned Loop'.



11

It would seem that this is the Whorl type and I would classify it as such. It may be, however the scarification has diverted ridges assimilating a recurving ridge.



(12)

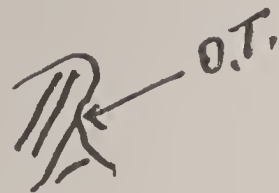


12



13

In case of webbed fingers classification is fixed according to the type of each of the two digits. The exhibit is badly taken. The type appears to be Loop, Central Pocket Loop if of the right hand and Central Pocket Loop if of the left hand.



14

In types such as this the two ridges forming Core are presumed to join. Loop with one count. See Number 24.



15

16

Tented Arch

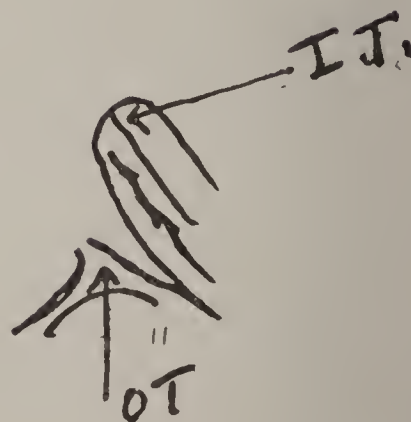
Tented Arch





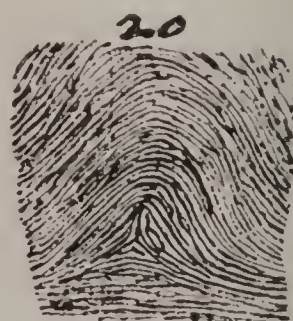
17

Loop with three counts.



18

Loop with two counts. This print is approximating a Tented Arch and when searching records search should also be made under Tented Arch.



19

Loop.

20

Tented Arch.  
Approximating Loop



21

Loop. Scar to right of Delta gives it the appearance of a Lateral Pocket.

22

Loop. See illustration 77. in fourth edition of my book.

23



Loop.



24

\* Classification and Uses of Finger Prints, "by Sir E. R. Henry.

According to rules I have laid down this would not be classified as a Loop because there are no re-curling ridge inside the delta. In practice it has been found more convenient to presume the ridge lines marked (o) to join and classify as Loop.



25

Loop.



26

Loop.



27



28

Loop. Number 28. This print is very faint and I think it is of Loop type.





29



30

Central Pocket Loop. See Figure No. 26. page 41 of 4th edition of my book.

# CLASSIFYING THE TWO HANDS

## OF TEN DIGITS

### the patterns loops

The Loop type pattern is so named because the formation of the ridges surrounding the core recurve in a natural loop. Usually each ridge enters the contour of the pattern on one side of a well defined center, called the core, which is situated on the apex of the bulb of the fingers, making a loop over the top of the core to make an exit from the pattern parallel with its entrance.

The general run of Loops usually outline the pattern at the angle of about 45°. That is, by drawing a line straight down the center of pattern, the slope taken by the ridges that constitute the pattern, will look upon the paper to assume a position near a 45° angle with the straight line. But not always, for some Loops enter the pattern from a horizontal position, and after making a 50 % turn, run straight up the finger on each side of the bulb. Figure 142 is a sample of this type.

In making up a classification so that a representative formula is derived thereby allowing segregation of the print in the file, a certain value is given to the different patterns which makes a geometrical progression by which the finger print records can be filed systematically.

Each hand has a set value of one—no matter what type of pattern is on the five fingers. This one is added after all the fingers have been counted.

Loops are represented by a cipher, "O". No matter how many loops are on any hand they do not count in making the primary classification.

If a set of prints are all loops, there is no count; so the set value of one (1) is given to each hand so a numerical place can be established in the file. Plate Number 23 shows a print with the Primary classification of one over one; which is written:  $\frac{1.}{1}$

Loops and Arches supply the key letters for the sub-classification. They are indicated by the capital letters of the patterns being used as a symbol: U for Ulnar, R for Radial, A for Arch and T for Tented Arch.

Plate No. 23 sub-classification is  $\frac{U}{U}$  while the

sub-classification of Plate No. 25 is  $\frac{A}{A}$



The index, or first finger of the hands is used for sub-classification. If there is an Ulnar Loop upon both index fingers it is shown by the symbol  $\frac{U}{U}$ .

If Radial Loops are on both index fingers it is denoted

$\frac{R}{R}$  if an Ulnar Loop is upon the right index

finger and a Radial Loop is upon the left index finger,

it would be shown by  $\frac{U}{R}$  ———

The Loop combinations for sub-classifications are:

U	U	R	R	U	—	R	—
U	R	U	R	—	U	—	R

The secondary sub-classification is made by ridge counting. The number of ridges between the inner terminus or core, and the outer terminus at the delta are counted; according to their number, they are designated as inner or outer. The first letter of inner or outer is the symbol used to indicate the division. I standing for inner, and O for outer.

If the index finger has any number below 9, it is an I. (inner). If the index finger has ten (10) or more ridges it is an O. (outer). This rule applies to both index fingers.

The next part of the secondary classification is made by counting the number of ridges upon the middle fingers. If the middle finger has any number of ridges below and including ten (10) it is an inner, (I). If the middle finger has any number of ridges above and including eleven (11) it is an outer, (O). This rule applies to the middle fingers of both hands.

If a Loop follows Loop upon the index and middle fingers, both fingers are shown in the secondary sub-classification. If a Loop is on the index finger and a Composite upon the middle finger, only the Loop is designated in the secondary classification.

It has been found necessary to also classify the ring finger for convenience in handling the prints in extra large files. So another count of two (2), is added to the number, making under and including thirteen (13) an inner; and fourteen or more an outer.



Figure No. 142.

Loops have two names. Ulnar Loops, and Radial Loops. Which name is determined by the direction, or slant the exit of the Loop takes upon the fingers. If the pattern slopes toward the little finger it is an Ulnar Loop. If the slope is toward the thumb, it is a Radial Loop. This reverses the name for the Loops on each hand. An Ulnar Loop on the right hand slopes to the right, while the Radial Loop runs in the opposite direction to the left. On the left hand, the Ulnar Loop slopes to the left, while the Radial Loop slopes to the right. Figures No. 145--146 show this type.



Figure No. 143.  
Right hand Ulnar Loop.



Figure No. 144.  
Right hand Radial Loop.










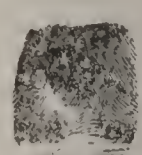
RIGHT HAND				
1.—Right Thumb	2.—R. Forefinger	3.—R. Middle Finger	4.—R. Ring Finger	5.—R. Little Finger
R 12	R 6	R 3	R 7	R 7
				
LEFT HAND				
6.—L. Thumb	7.—L. Forefinger	8.—L. Middle Finger	9.—L. Ring Finger	10.—Left Little Finger
L 9	L 6	L 5	L 7	L 9
				
LEFT HAND			RIGHT HAND	
The prints of the fingers of the left hand are TAKEN SIMULTANEOUSLY.			The prints of the fingers of the right hand are TAKEN SIMULTANEOUSLY.	

Plate 25.





Figure No. 145.  
Left hand Ulnar Loop.



Figure No. 146.  
Left hand Radial Loop.

If the little finger is a Loop, the ridges between the inner terminus, and the outer terminus, are counted; and their number is placed in the classification as found. If there are seven (7) ridges, then the numeral seven is written above the print, and also on the line that carries the complete classification. The

full reading of Plate No. 23. is

1	U	I	I	7	.
<hr/>					
1	U	I	I	9	

Which is read one over one, U over U, I over I, I over I seven over nine. On page 194 are several illustrations marked with a circle just below the inner terminus and an arrow pointing at the outer termini.



Figure No. 147.    Figure No. 148.    Figure No. 149.



Figure No. 150.    Figure No. 151.    Figure No. 152.

There is but one way to correctly learn to make up a representative formula for a classification. That one way is to actually make up the classifications. The simplest way is always best, and by thoroughly learning each step in the process, quickness and accuracy will be acquired. To aid the reader gain proficiency in classifying, a few classifications will be made up in correct order.

Plate No. 26. shows an average record of Loops, for which a classification is derived as follows;

First, each impression has the symbol of its pattern placed under the imprint. Commencing with the right thumb, the symbol ' \ ' is written in the proper place; then, in regular order, as named, the same action is done for the forefinger, middle, ring, and little fingers; then commencing with the left thumb, the above method is used in the same order on the left hand.

Secondly a count of the ridges between the Inner Terminus, (I. T.) and the Outer Terminus, (O. T.) is made, and the number of ridges is written above the impression.

The right thumb has a count of five; the forefinger 2; the middle finger 5; the ring finger, 5, and the little finger also has 5.

Starting with the left thumb, the same action is repeated on the left hand on the same order, and the print is ready for the classification to be written in.

With a scratch pad handy to write upon, the third process is commenced by drawing an horizontal line on the pad..... The fingers are then observed in units of two.

1st pair, the right thumb and forefinger.

2nd pair, the right middle and ring fingers.

3rd pair, the right little finger and the left thumb.

4th pair, the left fore finger and the middle finger.

5th pair, the left ring and little fingers.

To classify Plate No.23. it is not absolutely necessary to carry out the full operation of the third process in classifying, as a glance over the symbols underneath the patterns show that it is a one over one primary classification. But it is safest, and easiest, for the beginner to learn by actual practice; so the process will be outlined.

With pencil ready to write on the line that is upon the scratch pad. the pattern symbol of the right thumb is observed. It shows an Ulnar Loop, so cipher is



written on the top of the line near its starting point. The right forefinger is next in order, being also an Ulnar Loop, a cipher is placed under the line - and under the first cipher:  $\frac{0}{0}$

Then another cipher is placed above the line for the right middle finger; also a cipher underneath for the right ring finger:  $\frac{0}{0} \quad \frac{0}{0}$

The Ulnar Loop on the right little finger, and the Ulnar Loop on the left thumb also get a cipher a piece:  $\frac{0}{0} \quad \frac{0}{0} \quad \frac{0}{0}$

The left forefinger and middle also:  $\frac{0}{0} \quad \frac{0}{0} \quad \frac{0}{0} \quad \frac{0}{0}$

The left ring and little fingers also being Ulnar Loops, complete the five units by receiving the last two ciphers:  $\frac{0}{0} \quad \frac{0}{0} \quad \frac{0}{0} \quad \frac{0}{0} \quad \frac{0}{0}$

In order to maintain a numerical progression for primary purposes in the file, it is necessary that a number be assigned to each Finger Print Record that is to be placed in the file. So a set value of one (1) is given to every hand - irrespective of what patterns may be on the fingers of any hand.











1.—Right Thumb	2.—R. Forefinger	3.—R. Middle Finger	4.—R. Ring Finger	5.—R. Little Finger
R <sub>2</sub> - 5	R <sub>1</sub> ✓	R 5	R 5	5
				
LEFT HAND			LEFT HAND	
6.—L. Thumb	7.—L. Forefinger	8. L. Middle Finger	9. L. Ring Finger	10.—L. Little Finger
U <sub>2</sub> 5	U ✓	U <sub>1</sub> 5	U <sub>2</sub> 5	U <sub>2</sub> 4
				
LEFT HAND Plain impression of the four fingers TAKEN SIMULTANEOUSLY			RIGHT HAND Plain impression of the four fingers TAKEN SIMULT	

Plate 26

So at the conclusion of the third operation a one (1) as added to the row of ciphers for each hand:

$$\begin{array}{r} 0 \ 0 \ 0 \ 0 \ 0 \ + \ 1 \ = \ 1 \\ \hline 0 \ 0 \ 0 \ 0 \ 0 \ + \ 1 \ = \ 1 \end{array}$$

As the ciphers do not total , the primary classification is  $\frac{1}{1}$ . The fourth process is making the sub-

classification, which indicate the patterns upon the forefingers. On this record, both are Ulnar Loops,so the capital letter "U" is written above and below the

line: 
$$\begin{array}{r} 0 \ 0 \ 0 \ 0 \ 0 \ + \ 1 \ = \ 1 \ U. \\ \hline 0 \ 0 \ 0 \ 0 \ 0 \ + \ 1 \ = \ 1 \ U \end{array}$$

The fifth process is the second sub-classification. As all the impressions of Plate No. 25 are plain Loops, ridge counting constitute the indicators to continue the classification.

As all the numbers below 9 are Inners, on the forefinger, an "I" is placed above the line next to the "U".

As all numbers below ten (10) are Inners when on the middle fingers, another "I" is placed above the line next to the first "I". This is repeated for the left forefinger and the left middle finger, with the difference that the symbol "I" is placed below the line.

$$\begin{array}{r} 0 \ 0 \ 0 \ 0 \ 0 \ + \ 1 \ = \ 1 \ U \ 1 \ 1. \\ \hline 0 \ 0 \ 0 \ 0 \ 0 \ + \ 1 \ = \ 1 \ U \ 1 \ 1. \end{array}$$



If the file is an extra large size, the count of the ring fingers is also used, but for ordinary files the index and middle fingers are found to be sufficient.

The last process in making up the classification is the little finger count. On the print we are classifying, it is 5 on the right hand, and 4 on the left hand. So the figures 5 and 4 are placed in the proper position, making a classification reading

$$\begin{array}{rcccccc} 1 & U & 1 & 1 & 5 \\ \hline 1 & U & 1 & 1 & 4 \end{array}$$

for Plate No. 26.

Ridge counting is not used in what are known as the "lettered combinations. If an Arch, or Radial Loop happened to be upon one of the other fingers it would change this classification. Suppose an Arch was upon the right middle finger

$$\begin{array}{rcccccc} | \backslash | \backslash | A | \backslash | \backslash | & 1 & U & a & 5 \\ \hline | / | / | / | / | / | & 1 & U & & 4 \end{array}$$

If a Radial Loop and more Arches appeared, as in

$$\begin{array}{rccccc} | / | \backslash | \backslash | A | \backslash | \\ | A | / | / | / | A | \end{array}$$

which would read

$$\begin{array}{rcccccc} 1 & r & U & a & 5 . \\ \hline 1 & a & U & a \end{array}$$

## ARCHES



Figure No. 153.

The formation of the ridges on the Arch pattern is from one side of the bulb of the finger to the other side. The ridges make no returning curve. Usually the ridges curve upward in the center of the finger, it is from this form that the name Arch is derived. Figures 153-4-5.



Figure No. 154.



Figure No. 155.

Like the Loops, Arches have no set value, so if all five fingers happen to be Arches, the set value of one (1) supplies the primary classification number. If all the ten digits are Arches or Loops and Arches, the primary classification is one over one  $\frac{1}{1}$ .

Arches are indicated by the capital letter "A" supplying the symbol, if an Arch is upon either of the index fingers, and the small letter "a" for the Arches upon the other fingers. When an Arch occurs on either of the index fingers, the print automatically falls into what is known as "the lettered combination". This lettered combination has sixteen divisions, which in turn is sub-divided by a small letter representing the Arches, Tented Arches, or Radial Loops, that appear upon other than the index fingers.

When an Arch appears upon an index finger it is indicated in the sub-classification by the capital letter "A" ; the following are the combinations in which the capital letter "A" show upon the index

fingers:	A	U	A	R	A	T	A	—	A
	A	A	U	A	R	A	T	A	—

If an Arch is upon all five fingers it is written:  
a A 3a.

If Arches are upon all ten digits, it is written:

a	A	3a
a	A	3a.



If an Arch is upon the middle, ring, or little fingers it is shown by a small 'a'. If there are two Arches, they are shown by writing the numeral 2a,

thus:  $\frac{a \ A \ 2a}{U \ a \ 7}$  which shows an Arch upon the

right thumb, and Arch upon the right hand index, and upon either the right hand middle, or ring fingers; with an Arch on the little finger. While the left hand has all Loops with the exception of the middle or ring fingers. If the right hand little finger had had a Loop upon it, the count would have shown like it does on the left hand.

Under the heading of "The Order of the File" a list of the different combinations will be found.



Figure No. 156.

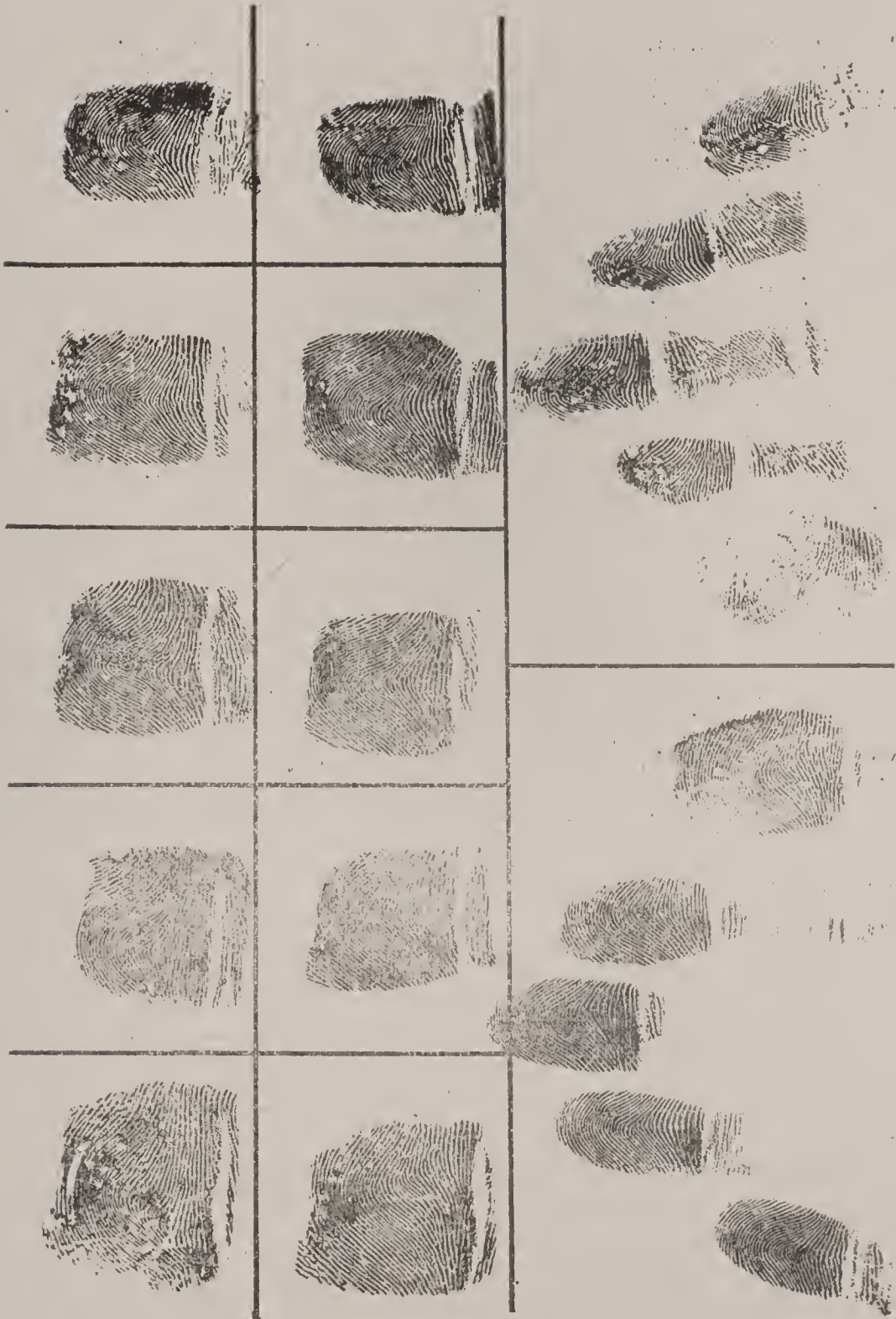


Plate 27

If the right middle finger on Plate No. 26 was scarred so badly that the outline of the Loop could not be made out, the classification would be somewhat changed, as will be shown after classifying this record.

After placing the pattern symbols under the impressions on Plate No. 26. the frequency of the "A" being noticed; there is no need to repeat the process of placing the ciphers over and under the line, being Loops and Arches the print falls into the lettered combinations, with, of course, a one over one primary

classification.  $\frac{1}{1}$

Drawing the horizontal line on the scratch-pad. the Arches on the right hand are looked at, and a small "a" for the Arch on the thumb, a capital "A" for the Arch on the forefinger, is placed above the line, after the  $\frac{1 \text{ a A}}{1}$ .



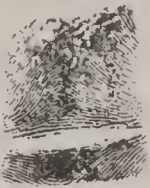







Then looking at the left hand five (5) Arches are found, which are expressed by writing "a A 3 a" under the line. With the addition of the figure two (2) of the right little finger, the classification is completed.

$\frac{1 \text{ a A} \quad 2}{1 \text{ a A 3 a —}}$

If all traces of the Loop on the right middle finger were completely obliterated, the pattern would be given as an Arch, thus making a classification of

$\frac{1 \text{ a A a} \quad 2}{1 \text{ a A 3 a —}}$



60 4	1. Right Thumb	2. R. Forefinger	3. —R. Middle Finger	4. —R. Ring Finger	5. —R. Little Finger
					
17	LEFT HAND			LEFT HAND	
	6. Left Thumb	7. L. Forefinger	8. L. Middle Finger	9. —L. Ring Finger	10. —L. Little Finger
					
	LEFT HAND			RIGHT HAND	
	Plain impression of the four fingers TAKEN SIMULTANEOUSLY			Plain impression of the four fingers TAKEN SIMULTANEOUSLY	

The rule is: If a finger is so scarred, that the pattern cannot be understood, or the finger, or the fingers, are amputated; the classification is made by giving the pattern of the same finger, or fingers, of the other hand.

Plate No. 26. falls into the "A" lettered class. First placing the one over one on, and below the line, the Arches are indicated by "a A 2 a" for each

hand.     1 a A 2 a .  
             1 a A 2 a

Plate No. 26 has a classification that reads:

1 A a 4 .  
 1 A 2 a

## TENTED ARCHES



Figure No. 157.

The formation of the pattern in a Tented Arch has one or more ridges that run for a short distance toward the nail of the finger, thus forming a rod that may be likened to the pole of a tent, as the rest of the ridges take a curving turn over the top of this rod; hence the name Tented Arch is derived from the general appearance of a tent which the pattern possesses Figure No. 157.

Tented Arches come within what is termed the lettered combination of the file. The capital letter "T" is its symbol, and indicates that a Tented Arch is upon one of the index fingers. A Tented Arch has no numeric value in preparing the primary classification. If all the fingers are T's or A's, or Loops on one hand, the hand receives the numeric value of



one (1), which allows the print to be placed in the one

over one section of the file  $\frac{(1)}{(1)}$



Figure No. 158.



Figure No. 159.

When a Tented Arch appears upon an index finger it is indicated in the sub-classification by the capital letter "T". the following are the combinations in which the letter "T" show upon the index fingers:

T	T	U	T	R	A	T	—	T
T	U	T	R	T	T	A	T	—

Figure No. 162. has an appearance of being a Tented Arch, but close observation will plainly show



Figure No. 160.



Figure No. 161.

a well defined Loop and delta with a count of two.

When classifying Tented Arches, classify them the same as Arches only using the symbol "T" instead of "A".



Figure No. 162.

61











RIGHT HAND			RIGHT HAND	
1.—Right Thumb	2.—R. Forefinger	3.—R. Middle Finger	4.—R. Ring Finger	5.—R. Little Finger
5		2		11
				
LEFT HAND			LEFT HAND	
6.—L. Thumb	7.—L. Forefinger	8.—L. Middle Finger	9.—L. Ring Finger	10.—L. Little Finger
3			1	
				
LEFT HAND			RIGHT HAND	
Plain impression of the four fingers TAKEN SIMULTANEOUSLY			Plain impression of the four fingers TAKEN SIMULTANEOUSLY	

Plate 28



## WHORLS



Figure No. 163.

The formation of the ridges on the Whorl pattern are either round, or elliptical, making at least one complete turn inside of the deltas.

Some Whorls have ridges that run in circles like Figure No. 163. Others have ridges that take an elliptical formation like Figure No. 164. Then there is the spiral type of Whorl, like Figure No. 165, which is a single spiral Whorl similar to Figure No. 166.



Figure No. 164.

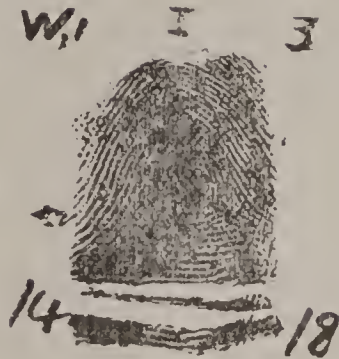


Figure No. 165.



Figure No. 166.

Some Whorls are very small, while others are very large.

Care is necessary not to confuse the Composite patterns with the Whorls. The Composites are: Twinned Loops, Central Pocket Loops, Lateral Pocket Loops, and Accidentals. Only by tracing some of the ridges with the counting pointer when in doubt, can the difference be clearly defined.

The Whorls, and the Composites, supply the numerical primary classification--which is the index to the file, and denoted by the numerals preceeding the letters of the sub-classification; with the exception of the one over one divisions, which indicate that Loops and Arches only are in those divisions.

In order to make the primary classification, the fingers are divided into five pairs, with the following set values being always given to the Whorls and Composites:

1st Pair, right thumb and right index finger  
16 each.

2nd Pair right middle and right ring fingers  
8 each

3rd Pair right little finger and left thumb  
4 each.

4th Pair, left index and left middle fingers  
2 each.

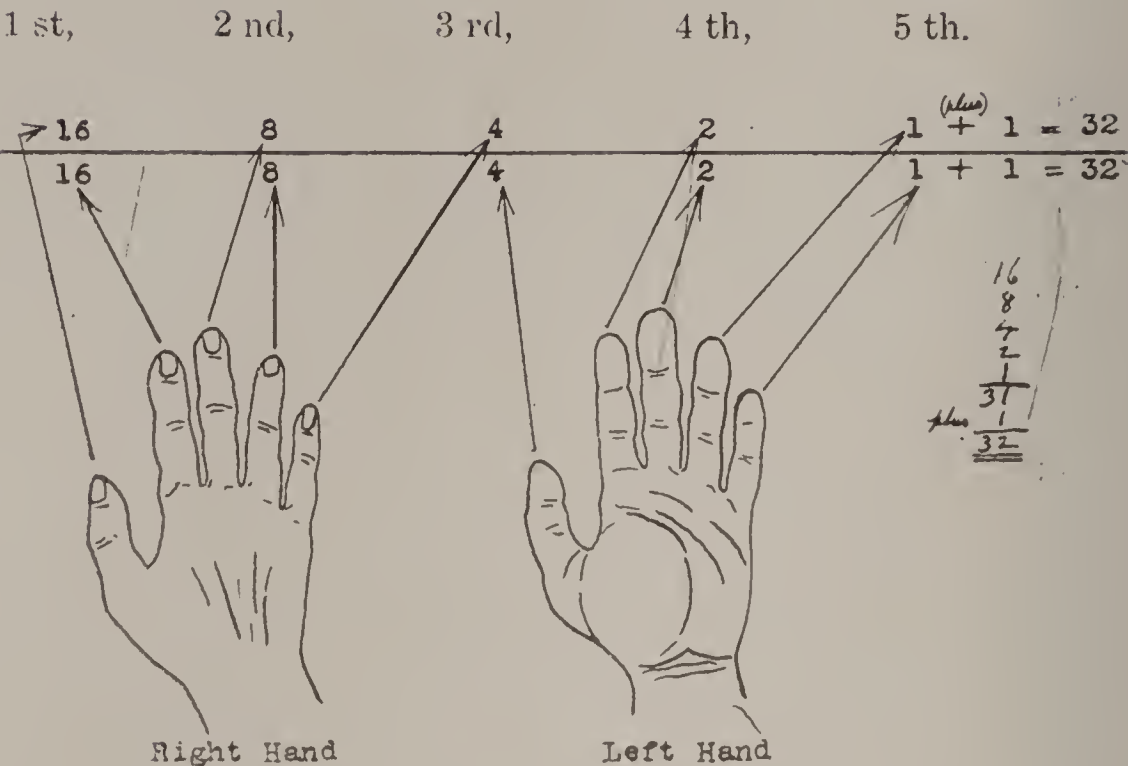
5th Pair, left ring and left little fingers.....1 each.

Total 31 for each hand.

The total numbers of the first fingers of each pair is known as the denominator, and the total of the numbers of the second fingers of each pair is the numerator. If a Whorl, or a Composite is upon each of the ten digits, a total of 31 is made for each hand; to the 31 a set number of one is given, making a total of 32 for each hand---which is the highest number that can be made. The following illustration shows how the numerator and denominator are obtained.

So to place the numerator and the denominator in the proper positions, after the numbers are added, and with the fixed number of one (1) also added; the totals are inverted when placed upon the classification line. Observe that only the numerals are inverted.





By giving the Loops and Arches when on the five fingers of each hand, a set value of one, and the numbered combinations of 16, 8, 4, 2 and 1. for the Whorls and Composites, there are more than 1024 variations of the formula for classification that can be made and used for filing purposes.

Right hand      

0	I	8	0	7
L	W	L	W	L

$$\begin{array}{r} 0 \ 0 \ 0 \ 0 \ 1 + 1 = 2 \\ 16 \ 8 \ 0 \ 0 \ 0 + 1 = 25 \end{array}$$

Left hand      

	10	9		10
L	L	L	W	L

$$\begin{array}{r} 25 - I . 7 \\ 2 \ U \ 0 \ I . 10 \end{array}$$

Right hand      

	0	11		17
W	R	U	W	U

$$\begin{array}{r} 16 \ 0 \ 0 \ 21 + 1 = 20 \\ 0 \ 8 \ 4 \ 0 \ 0 + 1 = 13 \end{array}$$

Left hand      

	I			10
W	W	U	W	U

$$\begin{array}{r} 13 \ R \ I \ 0 . 17 \\ 20 - I - . 10 \end{array}$$

The index finger of each hand is known as the fulcrum, for it supports the primary classification by sub-dividing it so that an orderly arrangement in the files permits the location of a print in the quickest possible time.

Whorls are indicated in the sub-classification by the symbols "I" for inner, "M" for Meet, and "O" for Outer. These symbols are found by tracing the left delta line across the bottom of the pattern to the right delta, where its position as an Inner, Meet, or Outer is determined by counting the ridges that intervene between the left delta line and the right delta.

If the left delta line is more than three ridges inside the right delta, it is an Inner and is represented by the symbol "I".

If the left delta line is three or less ridges on either side the right delta, it is a Meet and is represented by the symbol "M".

If the left delta line is more than three ridges on the outside of the right delta, it is an Outer and is represented by the symbol "O".



SINGLE FINGER PRINT SYSTEM

96













RIGHT HAND					RIGHT HAND				
1.—Right Thumb	2.—R. Forefinger	3.—R. Middle Finger	4.—R. Ring Finger	5.—R. Little Finger					
M	I	15	O	S	<p>Impression to be taken so that the fissure of the last joint shall be immediately above the black line. If any impression of any digit be defective, a second print may be taken in the vacant space above it.</p> <p>When a finger is mislabeled or so injured that the impression cannot be obtained, or is defective and yields a bad print, the fact should be noted under Remarks.</p>				
									
LEFT HAND									
6.—L. Thumb	7.—L. Forefinger	8.—L. Middle Finger	9.—L. Ring Finger	10.—L. Little Finger					
I	O	M	I	21					
									
LEFT HAND					RIGHT HAND				
Plain impression of the four fingers TAKEN SIMULTANEOUSLY.					Plain impression of the four fingers TAKEN SIMULTANEOUSLY.				
									

Plate 29.



Sub-classification is carried into the second division by representing the Whorls that are upon the middle fingers by the symbol letters "I", "M", and "O", so as to extend the possible variations of combinations for filing purposes.

If a Whorl is on an index finger and it is followed by a Loop on the middle finger; only the symbol--(I, M, or O ) for the Whorl is represented in the classification.

If a Whorl is upon both the index and middle fingers, both symbols are placed in the sub-classification.

Some files are so large that it has been found necessary to still further divide the classification. A third division is made by using the same symbols of "I", "M" and "O" when Whorls are upon all three fingers--or the counts when Loops are upon the index, middle and ring fingers.

Final classification is made by counting the ridges of the little fingers when they are loops. Some operators use the symbols "I", "M" and "O", when a Whorl is upon the little fingers. This is a detail anyone can work out according to the size of their file, for individual experience will decide which method answers the need best.

Plate No. 29. is a finger print record with Whorls. Composites, and Loops upon it. After the symbol of the patterns have been placed under each impression, and the deltas traced to see whether they are

Inners, (I), Meets, (M), or Outers, (O); and with the counts of the Loops written above the imprint, the record is prepared for the classification to be written in.

With pencil ready to write upon the scratch-pad the pattern symbol of the right thumb is looked at. It shows a "W", so 16 is written on the top of the line near the starting point. The right fore finger is next in order, being also a "W" the number 16 is placed under the line--and under the first 16

16	
16	

The right middle finger is a Loop, so a cipher is placed above the line, and next to the first "16". The ring finger is a "W", so the number "8" is placed

underneath the cipher:

16	0
16	8

The "W" on the right little finger, and the "W" on the left thumb get the next number; 4 each

16	0	4
----	---	---

16	8	4
----	---	---

The left fore and middle fingers get the next number of 2 :

16	0	4	2
16	8	4	2

The "W" on the left ring finger has a value of one (1), so the one is written above the line. The

left little finger is a Loop, having no value, a cipher

is placed under the one: 
$$\begin{array}{r} 16 \quad 0 \quad 4 \quad 2 \quad 1 \\ \hline 16 \quad 8 \quad 4 \quad 2 \quad 0 \end{array}$$

A value of one (1) for each hand is then placed above and below the line and the total is added and inverted ready to receive the sub-classification:

$$\begin{array}{r} 16 \quad 0 \quad 4 \quad 2 \quad 1 \quad + \quad 1 \quad = \quad 24 \quad 31 \\ \hline 16 \quad 8 \quad 4 \quad 2 \quad 0 \quad + \quad 1 \quad = \quad 31 \quad 24 \end{array}$$

As both forefingers are Whorls, the sub-classification is indicated by the tracings of the left delta. The right forefinger is an Inner Whorl, so an "I" is placed next to the primary classification. The right middle finger being a Loop is not represented in the classification.

The left fore and middle fingers being Whorls, their tracing letter is placed under the line and with the 21 count of the left little finger, the classification

reads: 
$$\begin{array}{r} 31 \quad I \\ \hline 24 \quad 0 \quad M \quad 21 \end{array}$$

An Arch is found on Plate No. 30 that places the record into the lettered section in the front part

of the primary division of 
$$\frac{27}{24}$$



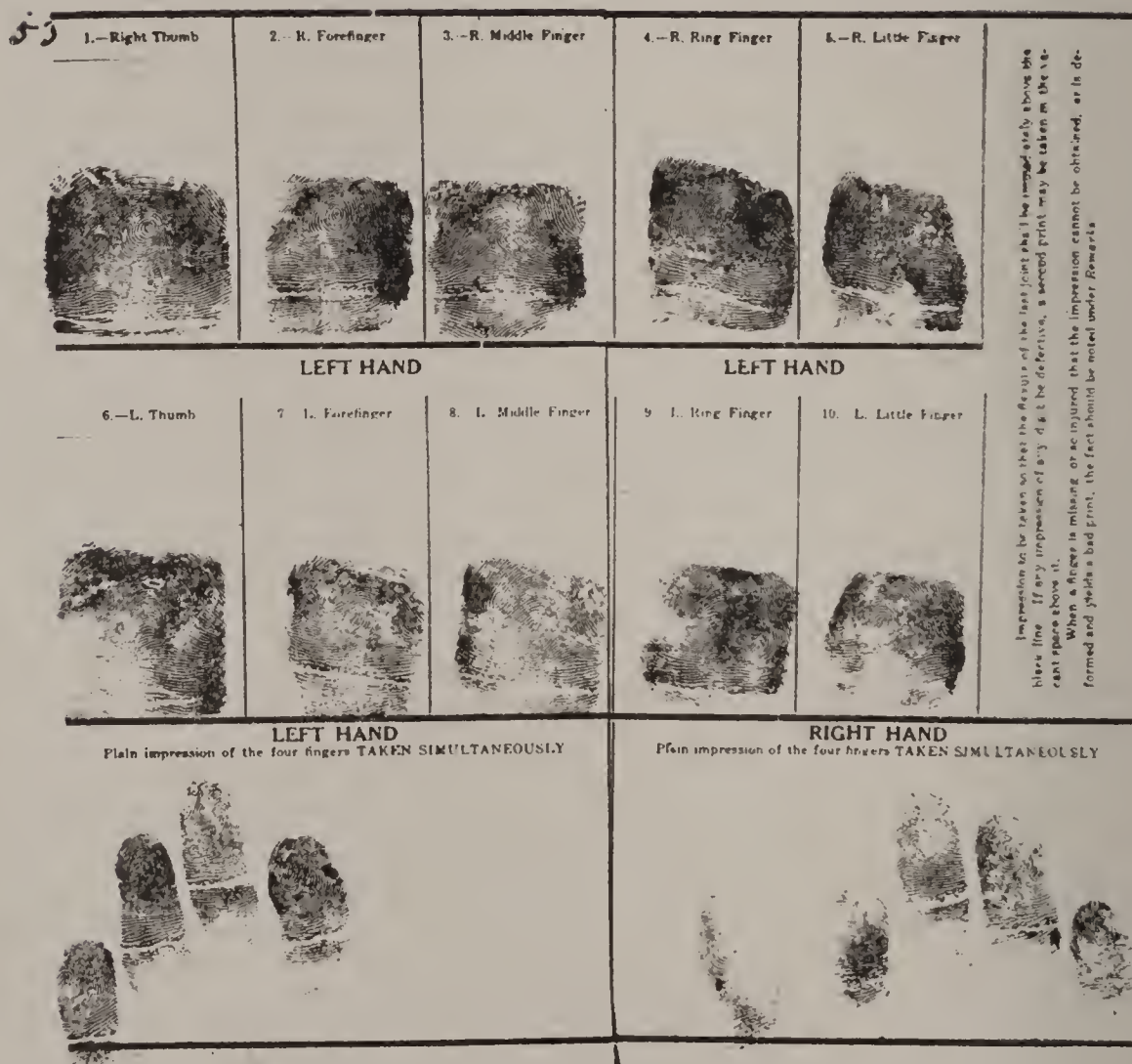


Plate 30.

The primary classification is made in the same manner as the preceeding finger print record. Then the Arch on the left thumb is placed before the two "I's" of the index fingers, thus giving a classification

that reads: 
$$\begin{array}{ccccccc} 24 & a & I & I & & 22 & . \\ \hline 27 & & I & & & & \end{array}$$

The Ulnar Loops on the right fore and middle fingers of Plate No. 30. places this record within the lettered combinations. After placing the pattern symbols underneath the impressions, and the counts and tracings in their proper places, the primary classification is made:

$$\begin{array}{cccccccccc} 0 & 8 & 4 & 2 & 0 & + & 1 & = & 15 & 3 \\ \hline 0 & 0 & 0 & 2 & 0 & + & 1 & = & 3 & 15 \end{array}$$

An Ulnar Loop being on the index and middle fingers of the right hand a U is placed next to the "15" and with a (—) dash underneath it, it forms the sub-classification.

The secondary sub-classification is started with the index finger again. There is a count of 12, so an "O" is placed next to the "U"; followed by an "I" for the middle finger, and the count of 9 for the little

finger. 
$$\begin{array}{ccccccc} 15 & U & O & I & 9 & . \\ \hline 3 & & & & & \end{array}$$

The tracings of the two Accidentals are next placed below the line, and with the little finger count of 12, a classification is had that reads:

$$\begin{array}{ccccccc} 15 & U & O & I & 9 & & \\ \hline 3 & -- & O & O & 12 & & \end{array}$$

If a Whorl had been upon the right middle finger it would not have shown in the secondary sub-classification. Just the same with the left hand; had a Loop followed the Ac., it would not be indicated in the classification. Only when a Loop follows a Loop, or a Whorl follows a Whorl--or Composites, is the second part of the sub-classification comprised of two letters.

Plate No. 30. also falls into the lettered section.

The reading of the classification being  $\frac{1 \quad A}{5 \quad A \quad a} \frac{17.}{15}$





Plate 31.

## TWINNED LOOPS



Figure No. 167.

The name of Twinned Loop has been given to one of the Composites because the formation of the ridges make two separate and distinct Loops within the one pattern. Figures No. 167 to 170.

Many Twinned Loops appear to be identical in ridge formation with the type known as the Lateral Pocket Loop. By tracing the ridge containing the points of the cores, the distinction is easy to find.

In Twinned Loops the ridges containing the points of the core have their exits on the opposite sides of the pattern. The Twinned Loop is given the

same numeric value as the Whorl. It is also used for sub-classification purposes similar to the Whorl, with the letters "I", "M" and "O" indicating the position of the left side delta line with the right delta. T. L. is the symbol used for a Twinned Loop, and it functions in making up a classification just the same as a Whorl.



Figure No. 168.



Figure No. 169.



Figure No. 170.



## LATERAL POCKET LOOPS



Figure No. 171.

Lateral Pocket Loops can, at first sight, be easily mistaken for Twinned Loops, for it also has two separate and distinct Loops within the same pattern. When the formation of the ridges bend sharply down on one side of another Loop, to recurve with a natural sweep and make an exit on the same side as the other Loop, it is named a Lateral Pocket Loop. Figure No. 171.

The ridges that recurve must be rounded, for if they meet at an angle, the pattern is an Ulnar, or Radial Loop and not a Lateral Pocket Loop.

By tracing the ridges that contain the points of the cores to their exits, the Lateral Pocket Loop and the Twinned Loops are easily differentiated.

The ridges surrounding the points of the cores of a Lateral Pocket Loop, make an exit on the same side of the pattern.

The same numerical value is attached to the L. P. to make up the classification, as is given to the Whorl; and the left delta line position is shown by "I", "M" or "O" to help complete the classification.



Figure No. 172.



Figure No. 173.

## CENTRAL POCKET LOOPS



Figure No. 174.

Central Pocket Loops derive their name from being the antonym of a Loop. Very often in the Loop type of pattern, the formation of the ridges around the core deviate from the general course of the ridges. The ridges nearest the core, after recurving, make another recurve which gives the plastic indication of the pocket— an approbative, convertible term adopted in mining. Figure No. 174 and 177.

There is only one rule to observe in determining a Central Pocket Loop. The second recurving ridge, or ridges, must recurve in a natural manner. If the angle of the lower curve is an acute angle, the pattern will not be a Central Pocket, but will be Loops Ulnar, or Radial. Figures No. 178--9---80, are not Central Pockets, but are Loops.



C. P. is the symbol used to indicate a Central Pocket (Loop. For classification purposes the Central Pocket is given the same value as the Whorls, and other Composites. The left delta line is the guide for finding whether the pattern is an Inner, Meet or an Outer, exactly as with other Composites. Left sloping CP's are "I", right sloping are "O".



Figure No. 175.



Figure No. 176.



Figure No. 177.



Figure No. 178.



Figure No. 179.



Figure No. 180.

## ACCIDENTALS



Figure No. 181.

The formation of the ridges in some patterns are indicative of two general patterns on the bulb of one finger. This type is termed Accidental. Denoted by the symbol Ac.

It is rare they are found--less than one per cent of a file. So to avoid confusion the Accidental is classed as a Composite, and used for classification purposes just the same as the Whorls and other Composites. Figures No. 181-2 & 129 to 134 show a few different varieties of three encentric patterns that the author has met with.



Figure No. 182.

## ORDER OF THE FILE

The file has four divisions.

1. Primary Division.
2. Sub-Division.
3. Second Sub-Division.
4. Little Finger Division.

The first division is arranged by the allocation of the numbers 1 to 32 in numerical order.

The second division is arranged by the letters A, T, R, U. and the symbol -- (for Whorl) being filled in the order given.

The third division is arranged by the letters I, M, and O, being filed in the order given.

The fourth division is arranged by the count found upon the little fingers being filed in numerical order.





11	12	13	17	18	19	20	21
4	4	4	4	4	4	4	4

23	24	25	26	27	28	29	31
4	4	4	4	4	4	4	4

32
4

1	2	5	9	10	11	13	14
5	5	5	5	5	5	5	5

17	18	19	20	21	25	26	29
5	5	5	5	5	5	5	5

30
5

1	2	3	5	6	9	10	11	12
6	6	6	6	6	6	6	6	6

13	14	16	17	21	25	26	27
6	6	6	6	6	6	6	6

28	29	30	32
6	6	6	6

1	2	5	6	9	10	11	13	14
7	7	7	7	7	7	7	7	7

17	18	21	25	29
7	7	7	7	7

1	3	5	9	10	11	12	13
8	8	8	8	8	8	8	8

14	16	17	18	19	21	25	26
8	8	8	8	8	8	8	8

27	28	29	30	31	32		
8	8	8	8	8	8		
1	2	3	4	5	11	13	17
9	9	9	9	9	9	9	9
21	24	25	27	29			
9	9	9	9	9			
1	3	5	9	11	12	13	15
10	10	10	10	10	10	10	10
16	17	18	19	20	21	25	27
10	10	10	10	10	10	10	10
29	31						
10	10						
1	3	5	9	11	13	17	19
11	11	11	11	11	11	11	11
21	25	26	27	29	31		
11	11	11	11	11	11		
1	5	6	9	11	13	15	17
12	12	12	12	12	12	12	12
19	21	25	26	27	28	29	31
12	12	12	12	12	12	12	12
32							
12							
1	3	5	9	13	17	21	25
13	13	13	13	13	13	13	13



27	28	29					
13	13	13					
1	5	9	10	11	12	13	16
14	14	14	14	14	14	14	14
17	18	21	25	26	27	28	29
14	14	14	14	14	14	14	14
30	31	32					
14	14	14					
1	2	5	9	11	13	17	21
15	15	15	15	15	15	15	15
25	26	28	29				
15	15	15	15				
1	5	9	10	11	12	13	16
16	16	16	16	16	16	16	16
17	21	25	26	27	28	29	30
16	16	16	16	16	16	16	16
31	32						
16	16						
1	2	3	5	6	7	9	10
17	17	17	17	17	17	17	17
11	13	14	15	17	18	19	21
17	17	17	17	17	17	17	17
22	23	25	26	27	29	30	31
17	17	17	17	17	17	17	17

1	2	3	5	6	7	9	10
18	18	18	18	18	18	18	18
11	12	13	14	15	16	17	18
18	18	18	18	18	18	18	18
19	21	22	23	25	26	27	28
18	18	18	18	18	18	18	18
29	30	31	32				
18	18	18	18				
1	5	6	7	8	9	11	13
19	19	19	19	19	19	19	19
14	15	18	19	21	22	23	24
19	19	19	19	19	19	19	19
25	27	28	29	30	31	32	
19	19	19	19	19	19	19	
1	3	5	6	7	8	9	10
20	20	20	20	20	20	20	20
11	12	13	14	15	16	17	18
20	20	20	20	20	20	20	20
20	21	22	23	24	25	26	27
20	20	20	20	20	20	20	20
28	29	30	31	32			
20	20	20	20	20			
1	5	9	10	11	13	14	15
21	21	21	21	21	21	21	21

16	17	18	21	22	25	29	30
21	21	21	21	21	21	21	21

31
21

1	2	5	6	9	10	11	12
22	22	22	22	22	22	22	22

13	14	15	16	17	20	21	22
22	22	22	22	22	22	22	22

23	25	26	27	28	29	30	31
22	22	22	22	22	22	22	22

32
22

1	5	6	9	10	11	13	14
23	23	23	23	23	23	23	23

15	17	21	22	23	24	25	26
23	23	23	23	23	23	23	23

28	29	30	31	32
23	23	23	23	23

1	5	9	10	11	13	14	15
24	24	24	24	24	24	24	24

16	17	18	21	22	23	25	26
24	24	24	24	24	24	24	24

27	28	29	30	31	32
24	24	24	24	24	24



1	3	5	7	9	10	11	13
25	25	25	25	25	25	25	25
14	15	17	19	21	22	23	25
25	25	25	25	25	25	25	25
27	29	31	32				
25	25	25	25				
1	2	5	6	7	8	9	10
26	26	26	26	26	26	26	26
11	12	13	14	15	16	17	18
26	26	26	26	26	26	26	26
19	21	23	24	25	26	27	28
26	26	26	26	26	26	26	26
29	31	32					
26	26	26					
1	3	5	7	8	9	11	13
27	27	27	27	27	27	27	27
14	15	17	18	19	21	23	25
27	27	27	27	27	27	27	27
27	29	30	31				
27	27	27	27				
1	3	5	7	9	11	13	14
28	28	28	28	28	28	28	28
15	16	17	19	21	23	25	26
28	28	28	28	28	28	28	28

27	28	29	30	31	32
28	28	28	28	28	28

1	2	5	9	11	13	17	19
29	29	29	29	29	29	29	29

21	25	29	31	32
29	29	29	29	29

1	5	9	10	11	12	13	14
30	30	30	30	30	30	30	30

15	16	17	21	22	25	26	27
30	30	30	30	30	30	30	30

28	29	30	31	32
30	30	30	30	30

1	5	9	11	13	15	17	19
31	31	31	31	31	31	31	31

21	22	25	27	28	29	30	31
31	31	31	31	31	31	31	31

32
31

1	5	9	10	11	12	13	14
32	32	32	32	32	32	32	32

15	16	17	21	25	26	27	28
32	32	32	32	32	32	32	32

29	30	31	32
32	32	32	32

The second division is arranged by letters, in the

$\frac{1}{1}$  division of  $\frac{A}{A}$  the filing is as follows:

A	aA	Aa	aAa	A2a	aA2a
A	A	A	A	A	A
A3a	aA3a	A	aA	Aa	aAa
A	A	aA	aA	aA	aA
A2a	aA2a	A3a	aA3a	A	aA
aA	aA	aA	aA	Aa	Aa
Aa	aAa	A2a	aA2a	A3a	aA3a
Aa	Aa	Aa	Aa	Aa	Aa
A	aA	Aa	aAa	A2a	aA2a
aAa	aAa	aAa	aAa	aAa	aAa
A3a	aA3a	A	aA	Aa	aAa
aAa	aAa	A2a	A2a	A2a	A2a
A2a	aA2a	A3a	aA3a	A	aA
A2a	A2a	A2a	A2a	aA2a	aA2a
Aa	aAa	A2a	aA2a	A3a	aA3a
aA2a	aA2a	aA2a	aA2a	aA2a	aA2a
A	aA	Aa	aAa	A2a	aA2a
A3a	A3a	A3a	A3a	A3a	A3a
A3a	aA3a	A	aA	Aa	aAa
A3a	A3a	aA3a	aA3a	aA3a	aA3a
A2a	aA2a	A3a	aA3a		
aA3a	aA3a	aA3a	aA3a		



$\frac{A}{A}$  and all the combinations that include the small letters, "a" "t" and "r", in their order to, and including  $\frac{A}{T}$  with small letters "a", "t" and "r".

$\frac{R}{A}$  with the small letter combinations of "a", "t"

and "r" in order; as:  $\frac{Atr}{aRr}$  for example, to and

including  $\frac{A}{R}$  and its following combinations of "a" "t" and "r".

$\frac{T}{T}$  with small lettered combinations of "a", "t" and "r".

$\frac{R}{T}$  and  $\frac{T}{R}$  and  $\frac{R}{R}$  same as above.

$\frac{U}{A}$  and  $\frac{A}{U}$  with small letters "a", "t" and "r" to  $\frac{U}{U}$

$\frac{T}{U} \frac{U}{T} \frac{R}{U} \frac{U}{R}$  with small lettered combinations

concludes the  $\frac{1}{1}$  sub-divisions, of lettered combinations.

In the  $\frac{1}{1}$  divisions of  $\frac{R}{R}$  and  $\frac{U}{U}$  further sub-divisions are made by using 64 combinations

of "I" and "O". Starting with  $\frac{III}{III}$   $\frac{II0}{III}$   $\frac{I00}{III}$

$\frac{0II}{III}$   $\frac{0I0}{III}$   $\frac{00I}{III}$   $\frac{000}{III}$  they continue to  $\frac{000}{000}$

the next in order being  $\frac{111}{1I0}$  . Reversing the "I"

and "O" until 64 combinations are made. If it is a small file only two letters or divisions need to be made.

Having the first part of the file arranged, the rest is easily placed, for with the two over one section the whorls commence.

In the numbers that permit Arches, Tented Arches, or Loops upon the index fingers. The Arches are filed first, Tented Arches second, Radial Loops third, and Ulnar Loops fourth, with the Whorls following in their sequence, Inners, Meets and Outers last. With each sectional sub-division the count upon the little finger is utilized, so by arranging the prints in numerical sequence, any record is readily found.

The following is the order for Inner, Meet and Outer Whorls.

II	IM	IO	MI	MM	MO	OI	OM	OO
I	I	I	I	I	I	I	I	I

II	IM	IO	MI	MM	MO	OI	OM	OO
M	M	M	M	M	M	M	M	M

II	IM	IO	MI	MM	MO	OI	OM	OO
O	O	O	O	O	O	O	O	O

If the ring finger is wanted to enlarge the number of variations that these letters, or symbols will give, it can be added so that seven hundred and twenty nine different sub-divisions are had between the  $\frac{III}{III}$

and  $\frac{OOO}{OOO}$ — thus making possible the filing of any number of finger print records without any confusion whatsoever.



## THE KNOWN HISTORY OF FINGER PRINTS

The utilization of the ridge formation of the fingers is far from being a recent discovery. Archaeologists are constantly finding traces of the markings of the fingers having been used in ancient times. Kai Kung-yen, an author of the T'ang dynasty, about 650 A. D. makes a distinct reference of finger prints being employed for the purpose of identification during that period.

So the earliest known record of finger printing is in the possession of the Chinese. When the Eastern hemisphere was at the height of its former prominence the Emperors of the Chinese used to sign each royal proclamation and decree by an imprint of the royal thumb.

This is not to imply that we are indebted to the Chinese for the present system of identification by finger prints.

The present system now universally used, was built upon the foundation originally laid down by Sir William J. Herschel and Sir Francis Galton, and brought into practice in 1901. by Sir E. R. Henry, then Commissioner of Police of the Metropolis, London, England.

Finger Printing as a system for scientific identification is based upon two principals; 1st. The widely varying individual characteristics on the finger tips, and 2nd., the persistency of the attributes of the patterns in the same individual from birth to death. Sir Francis Galton comments upon these two principles as follows:

“It is probable that no two finger prints in the whole world are so alike that an expert would fail to distinguish between them. As there is no sign, except in one case, of a change during any of these four intervals which together must wholly cover the ordinary life of man (boyhood, early manhood, middle age, extreme old age), we are justified in inferring that between birth and death there is absolutely no change in, say, 699 out of 700 of the numerous characteristics of the markings of the fingers of the same person as can be impressed by him whenever it is desirable to do so. Neither can there be any change after death up to the time when the skin perishes through decomposition; for example: the marks on the fingers of many Egyptian mummies and on the paws of stuffed monkeys still remain legible. Very good evidence and careful inquiry is thus seen to justify the popular idea of the persistence of finger markings. There appear to be bodily characteristics other than deep scars and tattoo marks comparable in their persistence to these markings; at the same time they are out of all proportion more numerous

than any other measurable features. The dimensions of the limbs and body alter in the course of growth and decay, the color, quantity, and quality of the hair, the tint and quality of the skin, the number and set of the teeth; the expression of the features, the gestures, the handwriting, even the eye color, change after many years. There seems to be no presistence in the visible parts of the body except in these minute and hitherto disregarded ridges". \*

In 1823, a Prof. Purkenje read a Latin Thesis on finger impressions before the University of Breslau, in which he gave nine standard patterns and suggested a system of classification; but his work failed to attract the attention it merited.

It was not until 1858 that anything more was heard about finger prints. Sir William J. Herschel chief administrator of the Hooghly District of Bengal, India; found a difficulty in identifying the natives to have government contracts satisfactorily concluded, so he instructed that each document should bear the signers finger prints. After pursuing this practice for a number of years, the familiarity of the patterns gradually gave him the idea of their individuality and he worked out a system on a small scale. Herschel also caused several other departments to adopt finger prints, notable, Registration of Deeds, Pension Office and jails in his district, and his system met with a marked success on small beginnings.

In 1877 Sir William J. Herschel submitted a report to the Inspector General of Jails, requesting permission to extend the system for criminal identification in India, but no action was taken.

\* Classification and Uses of Finger Prints by Sir E. R. Henry.



In 1880 an English scientific journal published two papers upon dactyloscopy. The first by Dr. Henry Faulds, of Tsukiji Hospital, Tokio; wherein was first published a method for the taking of finger impressions by the aid of printers ink. Dr. Faulds made some remarkable suggestions of the various uses that the "nature prints" could be put to. As we compare modern uses of finger prints with his suggestions, we know how well founded was his foresight; Faulds even went so far as to affirm a correspondence of finger prints through heredity. Substantiation of this will be a phase of the author's next work, as undoubtedly there is evidence enough of individual similarity through parentage to establish relationship. Also the patterns, and their formation are indicative of the personal character of the individual. These facts will be given in a later work.

Faulds was under the impression that his investigation into the "nature prints", as he termed them, was original. He considered himself to be the discoverer of dactyloscopy. Herschel immediately replied. Stating as an interesting fact that he had used finger prints as a means of identification for more than twenty years, and that he had worked out a system that rendered their utility practical.

As Faulds admitted that he had only devoted three years to his "nature prints" and whereas Herschel had worked out a system and employed it officially for many years; we must agree with Galton "That Sir William J. Herschel must be regarded as the first man who devised a feasible method for regular use, and afterwards officially adopted it. \*

\* "Finger Prints" by Sir F. Galton, 1892.

Herschel's system was not considered comprehensive enough to embrace a large collection of prints such as are found in the crowded centers of population. So he turned his collection of prints over to Sir Francis Galton who worked over the collection and decided to segregate the impressions into four types of finger print patterns with symbols to express them:

An Arch	^
A Loop that opens on the left	/
A Loop that opens on the right	\
A Whorl of any kind	O

After proving the permanance of finger prints, Galton devised a method of describing and classifying any number of finger print records and in 1893, persuaded the British Government to appoint a committee to investigate its feasibility in actual practice. The committee recommended that Galton's system be adopted and used in conjunction with the Bertillion Anthropometric System.

In the meantime Sir E. R. Henry, who had been Assistant Collector under Herschel in Bengal and therefore familiar with the first finger print system; was appointed as successor to Sir William J. Herschel. Sir Henry made a thorough study of Herschel's system and succeeded in making it more consistent and complete. In 1899 he presented a simplified system for finger print records before the British Association for the Advancement of Science, and in 1900 he published "Classification and Uses of Finger Prints" which has run through many editions and become a recognized standard work.

In 1901, Henry was appointed as Assistant Commissioner of Police at New Scotland Yard, and is the present acknowledged head of the system as is used today in English speaking countries.

As a means of identification, finger prints have received wider adoption in Argentina. The system used is mainly the work of Juan Vucetich and is named after him. It is based upon the bifurcations within the patterns. The chief uses of the system are for civil identification. Every able-bodied man is finger printed, and a side and front photograph taken when he reaches his majority. The finger prints and photograph are pasted into a small book, which he is required to produce at all important transactions. When a man is convicted for a crime, his book is taken from him. A law has recently been passed requiring everyone going ashore in that country to have their finger prints upon their person so they can be shown when asked for them.

France has recently passed a decree that everyone in France is to be registered by the imprint of the left thumb. It will be but a short time before all English speaking countries will require its citizens to be registered in a similar manner, for established identification in a social necessity.

In 1912, the United States Government, through the Commissioner of Indian Affairs, instructed all its officials that every Indian who could not write his name was to sign all checks, official papers and endorsements by making an impression of his right thumb in ink upon the document in lieu of his signature.



The United States Army and Navy, finger print all men accepted for service. When an enlisted man requests a discharge from the Army or Navy by correspondence, a document is sent to him that has to be personally filled out and his index finger imprint placed under the signature. This imprint is compared with the original finger print record and it is definitely known that the discharge is being given to the right man.

Paymasters of the Navy are personally responsible for the sums of money they disburse, some up-to-date Paymasters insist, when cashing Departmental checks for enlisted men, that the indorser place his finger prints upon the check at the time of signing.

In the United States, the use of finger prints as evidence of valid proof of guilt in murder trials, was first upheld in the case of a colored man who was executed on February 16th, 1912, in Cook County Illinois.

This mans finger prints had been taken before he was discharged from the Joliet Penitentiary a short time before the murder was committed. The evidence showed that the impression of a bloody finger upon some woodwork in the house where the crime was committed, was an imprint of a digit belonging to the Negro. Although the defense made a hard and bitter fight against the admissibility of the finger print evidence, the Court held that such evidence was sound and a thoroughly scientific witness that conclusively proved the guilt of the accused.

In 1921 an Old Chinaman was murdered in Southern California. The only clue that could be found was an imprint of four fingers upon the casing of a door. The police rounded up a number of Chinamen and took their finger prints in a house near the scene of the crime. Two other Chinamen happened to come along and seeing the other Chinamen crowding into the house, thought they would go and see what it was about.

They saw the funny marks made by the other Chinamen and one of them wanted to see how his fingers look upon paper, and readily stepped forward to be finger printed. Directly the expert looked at the impressions, he arrested the curious Chinamen—because he had found his man! A plea of “Guilty” was entered by the Chinaman’s lawyer in order to save his client from the extreme penalty.

There have been so many confessions by men and women convicted through finger print evidence, that the title of “the only scientific means of identification” has been firmly established in the Courts of the United States and no Judge or Jury can be found today who are not willing to accept finger prints as reliable, authentic witnesses.

The advantages of a professional organization are too well known to need description here. But the author feels that the attention of future Finger Print Experts should be drawn to a machine that is already functioning upon up-to-date, progressive lines. For when Mr. Harry H. Caldwell and his associates sent out the call that resulted in the formation of the

International Association for Identification (usually referred to as the "I. A. I.") the most formidable instrument that could be forged for the protection of Society was welded together.

For six years Mr. Caldwell occupied the position of President. His loyal and enthusiastic activity materially aided in placing the I. A. I. upon a firm foundation that commands the respect and confidence of all National and State Officials. "In recognition of the great value of Mr. Caldwell's services, and as a mark of our appreciation of his faithful and unfailing zeal in the cause of personal identification, the Seventh Annual Convention of the International Association for Identification, assembled in Washington, D. C. on the 21th day of September, 1921. hereby confer upon him an Active Life Membership in our Association, as a signal mark of our grateful recognition of his long term of useful labors in our behalf." ( \* )

As the adoption of the Single Finger Print Identification System for Commercial purposes will create a new position in the business world, i. e., Official Identification Officer for the establishment, it is well to inform the large number of ambitious young men and women who will give this new office their attention, of the activity of the I. A. I. so that they may become acquainted with the latest developments in the science of Dactylography. It would be a waste of time and labor to create an organization duplicating

\* Extract from minutes of the 7th Annual Convention of the I. A. I. page 21.



the I. A. I. so it was decided to request its president Mr. A. J. Renoe for a message to the profession in general that would outline the aims and purposes of the I. A. I. so that they could be fully understood by people who contemplated entering the field of personal identification.

As long as the principles of the I. A. I. are conformed with by its representatives and officials, the organization is worthy of our honest support. But if, at any time, the organization is made subservient to personal or private business interests, a referendum should be quickly used.

# The International Association for Identification

by A. J. Renoe

Chief of Bureau of Criminal Identification,  
Department of Justice, and President of International Association for Identification.

Organization is the prevailing tendency, the law, I might say of human society. As man advanced through social evolution from the individualism of savagery and barbarism, the adjustment of man's relations with his fellows required that common understanding which is the organized state of modern times. But this is for the general welfare of all under the same general condition. There remains the organization of those elements within the general body which have particular interests among themselves. This fundamental reason existed as the reason for the organization some years ago, of the International Association for Identification.

Previously, a need had arisen among the peace officers especially, for some medium whereby the chaotic methods prevailing could be done away with in the common interest of criminal detection. The condition of one city of one State using either no, method of identification of the criminal element, or using a different method than all others made for unbelievable confusion. It made for inefficiency and

for corresponding low estimation of the identification man as a servant and benefit to society.

Perhaps it was the gradual but increasing spread of the finger print as a means for personal identification which afforded the method around which identification men could rally, that has aided very materially the formation of the International Association for Identification, briefly called the "I. A. I.". The need having arisen in the existence of a large group of men and women engaged in identification as a profession, the organization only awaited the initiation by those who had foresight to send out the call to organize.

So, only a few years ago, a mere handful of men, though they were of high standing in the profession, met to form the I. A. I. Today it has a large and ever growing membership, embracing the foremost experts of the profession and, as associate members a number of the leading anthropologists, chemists and other scientists whose fields of investigation are in contact with identification men.

The I. A. I., while largely organized among peace officers of the country, does not confine its membership and activities to the criminal field alone. The rapid spread of identification by finger prints among large industrial interests, insurance companies, banks, the Postal Department, the Army and Navy Departments, civil establishments both public and private, all have given impetus to create, not only a large body of identification men and women, but an organization which will voice their interests and give that contact



between one another which is necessary to those who aim to keep up with the work.. The science itself in finger prints and in other phases is continually improving. And no man who today completes a course in any phase of identification work, should think that he can maintain himself without constant touch with his fellows and the new methods always evolving. So the I. A. I. has grown as identification experts in commercial, industrial, military and criminal fields have sensed the need of organization. It has grown steadily and rapidly and is still growing.

Each year its conventions, to which any member may come, sets the mark of attainment for the profession; gives the world the new methods or improvements on old methods, for the benefit of all the profession; puts the new identification men and women, in touch with those who are at the head of identification work in all lines; harmonizes and standardizes identification work and devices; tests everything with its collective mind; organizes campaigns for the proper legal measures to the interest of the profession; and plans for constant publicity in impressing the public with the vital necessity of personal identification and, in making the identification man worth much to society, it also asks society to recognize the unquestionable right of the identification expert to the social and economic standing of other professions. And its progress has met with a great measure of success. It has changed the public's view of finger prints from ridicule to awesome reverence at the miraculous certainty with which the finger print expert identifies one man out of a thousand, or out of a million, swiftly, surely.

Such is the past of the I. A. I. and its program for the future will be extended as new needs arise in the work, among those whose business has to do with personal identification in some of its various fields and who alone are entitled to full membership. To the peace official of whatever position, to the detective of standing and merit, to those who deal with identification in banking, insurance or industry, the International Association for Identification extends an invitation for mutual aid by contact with the large membership of the organization. Only by organization can we voice the special viewpoint and interests of identification men and women---and the organization is the International Association for Identification.

## INDEX

Ability of expert .....	13-4. 30. 56. 63. 156
Abrupt endings .....	69. 70
Acceptance of finger prints .....	13, 161, 248-49-50
Accidental impressions .....	117, 156, 229
Acknowledgment of assistance .....	18, 19, 20
Adaptability of finger prints .....	15, 17, 23-4-5
Additional details .....	96-7-8-9, 100
Additional safeguards .....	107-8-9-10
Analysis, condensed .....	66-78, 83, 86, 79
"    of Loops .....	50 to 60
Analysis, condensed .....	66, 78, 83, 86, 79
"    of Loops .....	50 to 60
"    of Latents .....	163 to 167
Anthropometric system and finger prints .....	17, 18
Arches, .....	103-116, 200-209
"    , counting position of .....	104--5-6-9-10, 114-5
"    , Tented .....	114-5-6, 208-9
Area of search on charts .....	148-153
Arithmetical rule for primary classification .....	213
Arrangement of system .....	129-30
Attention to details .....	40, 49, 56, 63, 211
"    " patterns .....	3, 5, 132
Average record of loops .....	137, 140
Bertillon system .....	17-18
Bifurcations used for counting .....	104 5-6-7
Binding rules .....	39, 65, 67, 98
Business card for finger prints .....	21, 131
"    and finger prints .....	22-29, 139
Capacity of system .....	26
Cards, finger print .....	18-27
Central Pocket loops .....	90, 227
Chances against finding a finger print .....	31-2-3
Change in finger prints .....	244
Characteristics of finger prints .....	68-9. 70. 87-8
Charting finger prints .....	39, 40, 132 38
"    "    " automatically .....	66
Charts, obtaining a supply of .....	141, 143
Circular Whorl .....	63 66
Civil Service Commission .....	25



Classifying Arches .....	103, 114, 200, 208
"    Central Pocket Loops .....	90, 227
"    Loops .....	41, 188
"    Lateral Pocket Loops .....	88, 225
"    Tented Arches .....	114, 208
"    Twinned Loops .....	79, 223
"    Whorls .....	63, 210
Code Telegraphic .....	99, 121
Commercial utility of finger prints .....	22
Comparison, value of .....	65, 139
Completing identification .....	14, 15
Complex Cores .....	60-1
Constructive steps .....	59
Core of patterns .....	44, 74
Cost of single finger printing .....	24
Counts, making the .....	39, 67, 98, 190
Creased patterns .....	62
Criminal identification .....	13, 30, 125
Customers, finger printing of .....	24-5
Dedication .....	6
Defaulting employees' .....	25
Definitions of complex patterns .....	177-8
"    "    character .....	97, 99, 246
Deltas .....	65, 213
"    , position of .....	65, 214
Demominators .....	212-3-4
Details for comparison .....	139
Descriptive nomenclature .....	121
Deviation of Loop patterns .....	94
Development of latents .....	156
Distinct classification .....	63, 94
Distinctive Loops .....	58
Dividing the classification .....	190-1-2-3
Division of Arches .....	103, 114, 200, 208
"    "    Central Pocket Loops .....	90, 227
"    "    Loops .....	43, 62, 190
"    "    patterns .....	129-30
"    "    Whorls .....	63-73
"    , sub .....	129
Double bifurcations .....	104
"    spiral Whorls .....	73
Dots .....	100
Easy comparison .....	71
Efficiency in classifying .....	14, 176
"    of finger prints .....	17-26
Egyptian mummies .....	244
Eliminating time .....	31

Elliptical Whorls .....	76
Enclosures, ridge details .....	104
Ends " " .....	75, 88, 89
Enumeration of details .....	98
Errors in classifying .....	94
Establishing identity .....	87, 139
Estrada case .....	156
Evidence in court .....	13, 125, 249
" of change .....	244
Example of the use of this system .....	31-2
Expansion of system .....	26
Facts for finger printing .....	101
Fifth segregation .....	59
File, size of .....	26, 143
Filing a classification .....	132
" , order of .....	129-30
Finding termini's .....	213
" finger prints .....	125
Finger printing customers .....	21-2-3
" prints in court .....	13, 125, 249
" " record .....	12
" " a Social necessity .....	28
" " singularity .....	101
" to be printed .....	28
Fire insurance records .....	24
First finger print .....	242
" segregation .....	42
Forks, ridge detail .....	103-4-5-6
Foundation of finger print .....	14, 243
Fourth segregation .....	53, 75
Function of expert .....	13, 176
Galton, Sir Francis .....	244
Geometrical progression .....	123, 211-12-13
Glass, use of magnifying .....	96
Government and finger print uses .....	25, 248-9
Guessing omit .....	13, 81, 104, 126
Identification bureaus, establishing .....	14
" Criminal .....	13, 125
" Chart .....	37, 131, 147
" scientific .....	56, 242, 247
Illustration of code telegrams .....	99-02
Impressions, finger print .....	92
" how to chart .....	69, 99, 125, 127
Important features .....	147
Individual characterization .....	52, 92, 97
" initiative .....	56, 80
Indexing patterns .....	39, 67, 132

Inking the pad .....	46, 72
Inners .....	198, 213
Inner termini's .....	59, 70, 198
International Association for Identification .....	251-5
Introduction .....	13
Instruments for taking finger prints .....	27
Insurance of automobiles .....	24
Islands, ridge detail .....	104-5-6-7
Key charts or cards .....	21, 131, 133, 153
Keying finger prints .....	132
Large Whorls .....	77
Largest number oof patterns .....	30
Lateral Pocket Loops .....	84, 225
Latents, source of .....	, 19, 20
Learning to classify .....	190
Left delta, function of .....	214
Left slope Loops .....	34
Lettered combinations .....	239-40-1
Li'eness of finger prints .....	22, 244
Little finger counts .....	199
Loops .....	41, 191
Lost identity .....	28
Make the counts, how to .....	39, 67, 195
Making a search .....	125
Major groupes .....	129-30
Marred patterns .....	62
Meets .....	213
Missing people and finger prints .....	28
"    fingers, how to classify .....	206
Modern uses of finger prints .....	248
Navy U. S., identification in .....	249
Noticable features .....	63, 94
Number of finger prints system will hold .....	26
"    " Loop types .....	125
"    " segregations .....	129
Numerators .....	212-13-14
Numerical progression .....	211-12-13, 127
Numeric value of Whorls .....	213
Obtaining the charts .....	143
Observation of details .....	42
Operating the S. F. P. I. System .....	125
Order of classifying .....	39, 67, 85
"    " file .....	129-30
Origin of finger prints .....	243
"    " originals .....	15-6-7-8
Outer terminus .....	213



Outers, classifying .....	190
Outline of ridges .....	118
Overcoming errors .....	117
Pastports, finger print upon .....	24
Persistence of patterns .....	243
Physical character from finger prints .....	70, 86, 104
Points for comparison .....	92
Porescopic study .....	87
Position of Arch counts .....	103-12
Position of deltas .....	80, 213
Powder to develope latents .....	160
Practice of finger prints, first .....	243
"    " classifiers .....	67
Preparing a finger print for classifying .....	127
Present system of classification .....	14
Price of civilization .....	28
Principles of scientific identification .....	19
Printing a single finger .....	81
Primary classification .....	189
Proficiency in classifying .....	170
Progress in society .....	253
Pronounced types .....	47
Proof of innocence .....	176
Protection, finger print .....	15, 17
"    , fraternal and secret society .....	25
"    , Insurance Co. ....	24
Quick methods .....	23
Quickness of S. F. P. I. System .....	125
Radial Loops .....	188
Record cards .....	12, 18, 27
Registering finger prints .....	125
Regularity of finger print ridges .....	243
Removal of ink from fingers .....	24
Representative formula .....	214
Responsibility of finger print expert .....	13, 176
Results daily produced .....	23, 156
"    to be gained .....	15
Retarding the system .....	149
Ridge counting .....	39, 67, 195
"    formation, results of .....	22
"    tracing .....	212
Right slope Loops .....	34
Rolling ink for finger printing .....	46-7
Rolled impressions charted .....	125, 127
Rules, binding .....	34, 39, 67

Rules for classifying .....	188
Safeguards, finger printing .....	67
Scarred patterns .....	62
Science of finger printing .....	33
Scientific identity principles of .....	24
Searching for finger prints .....	126
Second segregation .....	39
Secondary classification .....	190, 214
Segregating the Loops .....	41
"    "    Whorls .....	63
Separating the types .....	33
Seventh segregation of Loops .....	61
Short delta lines .....	57
Signature, finger print as a .....	20, 23
Similarity of finger prints .....	243
Simplicity of finger print patterns .....	26
Single finger print identification .....	27
Start of finger printing .....	204
Starting points to work from .....	40
Sub-division of system .....	129-30
Study of system .....	23
Sub-classification .....	214
Supply of charts .....	143
Successful utilization .....	156
Symbols .....	120-4
"    for Loops .....	42
Symmetry of patterns .....	103
"    "    ridges .....	94
Technic, Finger print .....	121-2-3
Telegraphic code .....	99
Telegraphing details .....	120
Tented Arches .....	114, 208
Testimony, finger prints as .....	13, 249
Third segregation of patterns .....	59
Title of finger prints .....	17
Tracing the ridges .....	213
Training the eye .....	65
Twinned Loops .....	79, 223
Types of patterns .....	41, 124
Ulnar Loops .....	50-1-2
Unique finger prints .....	142
Unit Systems .....	212-3
Universal classification .....	18, 188
Uses of finger prints .....	23
Use of latents .....	156
Useful knowledge .....	30, 42

Using the nearest delta .....	67
Vibrating patterns .....	94
Value of Arches .....	201
"    " features .....	104
"    " Lateral Pocket Loops .....	81
"    " Whorls .....	63
Variations in searching .....	34
Vucetich system .....	248
Whorls .....	63, 210
"    , classifying .....	67
"    , elongated .....	72
"    , inside .....	212
"    , meeting .....	213-4
"    , outside .....	213
"    , spiral .....	71
"    , types .....	70-8



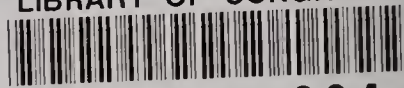








LIBRARY OF CONGRESS



0 038 701 364 7